# Contents of Volume 271
# American Journal of Physiology

American Journal of Physiology:
Cell Physiology

American Journal of Physiology:
Endocrinology and Metabolism

American Journal of Physiology:
Gastrointestinal and Liver Physiology

American Journal of Physiology:
Lung Cellular and Molecular Physiology

American Journal of Physiology:
Heart and Circulatory Physiology

American Journal of Physiology:
Regulatory, Integrative and Comparative Physiology

American Journal of Physiology:
Renal, Fluid and Electrolyte Physiology

Advances in Physiology Education

# American Journal of Physiology: Cell Physiology

**No. 1. JULY 1996**


## INVITED REVIEWS


William Hewson's studies of red blood corpuscles and the evolving concept of a cell membrane
*A. Kleinzeller* C1

Regulation of ion channels in smooth muscles by calcium
*A. Carl, H. K. Lee, and K. M. Sanders* C9

---

Hydrolytic and nonhydrolytic interactions in the ATP regulation of CFTR $Cl^-$ conductance
*M. M. Reddy and P. M. Quinton* C35

Paracrine mediation of calcium signaling in human SK-N-MCIXC neuroepithelioma cells
*R. K. Palmer, D. I. Yule, D. S. Shewach, J. A. Williams, and S. K. Fisher* C43

Plasmin-platelet interaction involves cleavage of functional thrombin receptor
*M. Kimura, T. T. Andersen, J. W. Fenton II, W. F. Bahou, and A. Aviv* C54

Stimulation of gastric acid secretion by cAMP in a novel α-toxin-permeabilized gland model
*X. Yao, S. M. Karam, M. Ramilo, Q. Rong, A. Thibodeau, and J. G. Forte* C61

Swelling and cAMP on hyperpolarization-activated $Cl^-$ conductance in rat Leydig cells
*J.-F. Noulin, E. Fayolle-Julien, J.-F. Desaphy, J.-P. Poindessault, and M. Joffre* C74

Effects of cytochrome *P*-450 inhibitors on ionic currents in isolated rat type I carotid body cells
*C. J. Hatton and C. Peers* C85

Changes in action potentials and ion currents in long-term cultured neonatal rat ventricular cells
*W. Guo, K. Kamiya, J. Cheng, and J. Toyama* C93

Cytochrome *P*-450 metabolites mediate extracellular $Ca^{2+}$-induced inhibition of apical $K^+$ channels in the TAL
*W.-H. Wang, M. Lu, and S. C. Hebert* C103

cAMP- and swelling-activated chloride conductance in rat hepatocytes
*X.-J. Meng and S. A. Weinman* C112

Regulation of HSP70 by PTH: a model of gene regulation not mediated by changes in cAMP levels
*S. Fukayama, B. Lanske, J. Guo, H. M. Kronenberg, and F. R. Bringhurst* C121

Increased sensitivity to $1,25(OH)_2D_3$ in bone from genetic hypercalciuric rats
*N. S. Krieger, V. M. Stathopoulos, and D. A. Bushinsky* C130

Protein kinase C-dependent phosphorylation of $Na^+$-$K^+$-ATPase α-subunit in rat kidney cortical tubules
*M. L. Carranza, E. Féraille, and H. Favre* C136

Modal gating in neuronal and skeletal muscle ryanodine-sensitive $Ca^{2+}$ release channels
*R. Armisén, J. Sierralta, P. Vélez, D. Naranjo, and B. A. Suárez-Isla* C144

Angiotensin II type 1 receptor modulation of neuronal $K^+$ and $Ca^{2+}$ currents: intracellular mechanisms
*C. Sumners, M. Zhu, C. H. Gelband, and P. Posner* C154

Expression and action of parathyroid hormone-related peptide in human cervical epithelial cells
*R. Kremer, C. D. Woodworth, and D. Goltzman* C164

Angiotensin-converting enzyme inhibitors regulate the $Na^+$-$K^+$ pump via effects on angiotensin metabolism
*L. C. Hool, D. F. Gray, B. G. Robinson, and H. H. Rasmussen* C172

Sarcoplasmic reticulum $Ca^{2+}$ pump in pig coronary artery smooth muscle is regulated by a novel pathway
*A. K. Grover, A. Xu, S. E. Samson, and N. Narayanan* C181

cAMP- but not $Ca^{2+}$-regulated $Cl^-$ conductance is lacking in cystic fibrosis mice epididymides and seminal vesicles
*A. Y. H. Leung, P. Y. D. Wong, J. R. Yankaskas, and R. C. Boucher* C188

FK-506 and rapamycin but not cyclosporin inhibit aldosterone-stimulated sodium transport in A6 cells
*M. D. Rokaw, M. E. West, P. M. Palevsky, and J. P. Johnson* C194

Transient activation of $K^+$ channels by carbachol in bovine pigmented ciliary body epithelial cells
*J. W. Stelling and T. J. C. Jacob* C203

Dipeptide uptake by adenohypophysial folliculostellate cells
*C. Otto, S. tom Dieck, and K. Bauer* C210

Interactions of external and internal $K^+$ with $K^+$-$HCO_3^-$ cotransporter of rat medullary thick ascending limb
*A. Blanchard, F. Leviel, M. Bichara, R.-A. Podevin, and M. Paillard* C218

Apical membrane permeability of MDCK cells
*R. L. Rivers, J. A. McAteer, J. L. Clendenon, B. A. Connors, A. P. Evan, and J. C. Williams, Jr.* C226

Measuring volume perturbation of proximal tubular cells in primary culture with three different techniques
*N. J. H. Raat, P. De Smet, W. Van Driessche, R. J. M. Bindels, and C. H. van Os* C235

Inhibition of renin secretion by $Ca^{2+}$ through activation of myosin light chain kinase
*C. S. Park, S.-H. Chang, H. S. Lee, S.-H. Kim, J. W. Chang, and C. D. Hong* C242

Inhibitory effect of $Ca^{2+}$ on renin secretion elicited by chemiosmotic stimuli through actomyosin mediation
*C. S. Park, H. S. Lee, S.-H. Chang, T. W. Honeyman, and C. D. Hong* C248

Role of protein kinases in regulating sheep erythrocyte K-Cl cotransport
*P. W. Flatman, N. C. Adragna, and P. K. Lauf* C255

Cellular mechanisms underlying adenosine actions on cholinergic transmission in enteric neurons
*C. Barajas-López, A. L. Peres, and R. Espinosa-Luna* C264

IFN-$\gamma$ modulates CD1d surface expression on intestinal epithelia
*S. P. Colgan, V. M. Morales, J. L. Madara, J. E. Polischuk, S. P. Balk, and R. S. Blumberg* C276

Role for protein phosphatase in the regulation of $Ca^{2+}$ influx in parotid gland acinar cells
*T. Sakai and I. S. Ambudkar* C284

Effect of low-protein diet-induced intrauterine growth retardation on rat placental amino acid transport
*M. S. Malandro, M. J. Beveridge, M. S. Kilberg, and D. A. Novak* C295

Dephosphorylation of activated protein kinase C contributes to downregulation by bryostatin
*H.-W. Lee, L. Smith, G. R. Pettit, and J. B. Smith* C304

Intestinal epithelial cytoskeleton selectively constrains lumen-to-tissue migration of neutrophils
*P. Hofman, L. D'Andrea, D. Carnes, S. P. Colgan, and J. L. Madara* C312

Human connexin 43 gap junction channel gating: evidence for mode shifts and/or heterogeneity
*P. R. Brink, S. V. Ramanan, and G. J. Christ* C321

$Ca^{2+}$-dependent nitric oxide release in endothelial but not R3230Ac rat mammary adenocarcinoma cells
*R. A. Lindberg, M. W. Dewhirst, B. J. Buckley, C. S. Hughes, and A. R. Whorton* C332

Phorbol ester and okadaic acid regulation of Na-2Cl-K cotransport in rabbit tracheal epithelial cells
*C. M. Liedtke and L. Thomas* C338

Altered sodium current response to intracellular fatty acids in halothane-hypersensitive skeletal muscle
*S. J. Wieland, Q.-H. Gong, J. E. Fletcher, and H. Rosenberg* C347

Prostaglandin $E_2$ inhibits Na-K-2Cl cotransport in medullary thick ascending limb cells
*D. M. Kaji, H. S. Chase, Jr., J. P. Eng, and J. Diaz* C354

Impaired cAMP-mediated gene expression and decreased cAMP response element binding protein in senescent cells
*J. H. Chin, M. Okazaki, J. S. Frazier, Z.-W. Hu, and B. B. Hoffman* C362

Human monocytes lose 5-lipoxygenase and FLAP as they mature into monocyte-derived macrophages in vitro
*W. L. Ring, C. A. Riddick, J. R. Baker, D. A. Munafo, and T. D. Bigby* C372

Functional analysis of a genetic defect of copper transport (Menkes disease) in different cell lines
*Y. Qian, E. Tiffany-Castiglioni, and E. D. Harris* C378

Enhanced NO production during Mg deficiency and its role in mediating red blood cell glutathione loss
*I. T. Mak, A. M. Komarov, T. L. Wagner, R. E. Stafford, B. F. Dickens, and W. B. Weglicki* C385

Effect of ablation of phospholamban on dynamics of cardiac myocyte contraction and intracellular $Ca^{2+}$
*B. M. Wolska, M. O. Stojanovic, W. Luo, E. G. Kranias, and R. J. Solaro* C391

Action of protein kinase C in endothelin-induced contractions in rat aortic rings
*G. K. Oriji and H. R. Keiser* C398

## MODELING IN PHYSIOLOGY

Mechanism of nonlinear responses of taste cells to mixed tastes
*Y. Kashimori, M. Naito, N. Sasaki, and T. Kambara* C405

## RAPID COMMUNICATIONS

Aldosterone regulation of sodium channel γ-subunit mRNA in cortical collecting duct cells
*D. L. Denault, G. Fejes-Tóth, and A. Náray-Fejes-Tóth* C423

Protein kinase A activation is required for IL-1-induced nitric oxide production by cardiac myocytes
*C. V. Oddis, R. L. Simmons, B. G. Hattler, and M. S. Finkel* C429

# No. 2. AUGUST 1996

## INVITED REVIEW

Characteristics and physiological role of the $Ca^{2+}$-activated $Cl^-$ conductance in smooth muscle
*W. A. Large and Q. Wang* C435

$Na^+$-$K^+$($NH_4^+$)-$2Cl^-$ cotransport in medullary thick ascending limb: control by PKA, PKC, and 20-HETE
*H. Amlal, C. Legoff, C. Vernimmen, M. Paillard, and M. Bichara* C455

Intracellular ADP-ribose inhibits ATP-sensitive $K^+$ channels in rat ventricular myocytes
*Y.-G. Kwak, S.-K. Park, U.-H. Kim, M.-K. Han, J.-S. Eun, K.-P. Cho, and S.-W. Chae* C464

Purinergic regulation of anion secretion by cystic fibrosis pancreatic duct cells
*H. C. Chan, W. T. Cheung, P. Y. Leung, L. J. Wu, S. B. C. Chew, W. H. Ko, and P. Y. D. Wong* C469

Monoclonal antibody against conductive chloride transport in pig ileal apical membrane vesicles
*K. J. Racette, S. E. Gabriel, K. J. Gaspar, and G. W. Forsyth* C478

Distinct cellular mechanisms of cholinergic and β-adrenergic sweat secretion
*M. M. Reddy and C. L. Bell* C486

Signal transduction and glial cell modulation of cultured brain microvessel endothelial cell tight junctions
*T. J. Raub* C495

Bovine adrenal endothelial cells express nucleoside transporters nonregulated by protein kinases A and C
*R. P. Sen, L. Sobrevía, E. G. Delicado, D. Yudilevich, and M. T. Miras-Portugal* C504

Potentiation of smooth muscle contractility after rapid changes in isotonic force
*R. A. Meiss* C511

Perforated patch-clamp recording in cardiac myocytes using cation-selective ionophore gramicidin
*Y. Tajima, K. Ono, and N. Akaike* C524

cAMP promotes gap junctional coupling in T84 cells
*M. Chanson, M. M. White, and S. S. Garber* C533

$Ca^{2+}$- and pH-dependent halothane stimulation of $Ca^{2+}$ release in sarcoplasmic reticulum from frog muscle
*M. Beltrán, R. Bull, P. Donoso, and C. Hidalgo* C540

Differential targeting of facilitative glucose transporters in polarized epithelial cells
*W. S. Pascoe, K. Inukai, Y. Oka, J. W. Slot, and D. E. James* C547

Dual regulation of $PLA_2$ and $PGI_2$ production by G proteins in bovine aortic endothelial cells
*M. Rosenstock, A. Danon, and G. Rimon* C555

Muscle function during jumping in frogs. I. Sarcomere length change, EMG pattern, and jumping performance
*G. J. Lutz and L. C. Rome* C563

Muscle function during jumping in frogs. II. Mechanical properties of muscle: implications for system design
*G. J. Lutz and L. C. Rome* C571

Anion channel blockers inhibit swelling-activated anion, cation, and nonelectrolyte transport in HeLa cells
*J. A. Hall, J. Kirk, J. R. Potts, C. Rae, and K. Kirk* C579

$\epsilon$-Isoenzyme of protein kinase C induces a $Ca^{2+}$-independent contraction in vascular smooth muscle
*A. Horowitz, O. Clément-Chomienne, M. P. Walsh, and K. G. Morgan* C589

Copper deficiency increases hepatic apolipoprotein B secretion and mRNA editing in rats
*S. K. Reaves, R. C. A. J. M. Hoogeveen, Y. R. Wang, J. Y. J. Wu, and K. Y. Lei* C595

Aldosterone-induced increase in the abundance of $Na^+$ channel subunits
*C. Asher, H. Wald, B. C. Rossier, and H. Garty* C605

Recruitment of purinergically stimulated $Cl^-$ channels from granule membrane to plasma membrane
*D. Merlin, X. Guo, K. Martin, C. Laboisse, D. Landis, G. Dubyak, and U. Hopfer* C612

Astroglial-mediated phosphorylation of the Na-K-Cl cotransporter in brain microvessel endothelial cells
*D. Sun and M. E. O'Donnell* C620

Flickery block of single CFTR chloride channels by intracellular anions and osmolytes
*P. Linsdell and J. W. Hanrahan* C628

Tyrosine phosphorylation of $pp125^{FAK}$ and paxillin in aortic endothelial cells induced by mechanical strain
*Y. Yano, J. Geibel, and B. E. Sumpio* C635

CFTR chloride channel activation by genistein: the role of serine/threonine protein phosphatases
*W. W. Reenstra, K. Yurko-Mauro, A. Dam, S. Raman, and S. Shorten* C650

Membrane depolarization in PC-12 cells during hypoxia is regulated by an $O_2$-sensitive $K^+$ current
*W. H. Zhu, L. Conforti, M. F. Czyzyk-Krzeska, and D. E. Millhorn* C658

Isometric force and maximal shortening velocity of single muscle fibers from elite master runners
*J. J. Widrick, S. W. Trappe, C. A. Blaser, D. L. Costill, and R. H. Fitts* C666

Force-velocity and force-power properties of single muscle fibers from elite master runners and sedentary men
*J. J. Widrick, S. W. Trappe, D. L. Costill, and R. H. Fitts* C676

Contractile activity and passive stretch regulate tubulin mRNA and protein content in cardiac myocytes
*P. A. Watson, R. Hannan, L. L. Carl, and K. E. Giger* C684

**RAPID COMMUNICATION**

Induction of β-MHC transgene in overloaded skeletal muscle is not eliminated by mutation of conserved elements
*G. L. Tsika, J. L. Wiedenman, L. Gao, J. J. McCarthy, K. Sheriff-Carter, I. D. Rivera-Rivera, and R. W. Tsika* C690

**ANNOUNCEMENTS** C700

**No. 3. SEPTEMBER 1996**

**EDITORIAL**

A personal perspective
*K. E. Barrett* C701

**INVITED REVIEW**

Role of ion channels in aqueous humor formation
*T. J. C. Jacob and M. M. Civan* C703

Mechanisms of recovery from mechanical injury of cultured rat hepatocytes
*H. T. Sponsel, P. S. Guzelian, S. E. S. Brown, R. Breckon, C. Ray, F. R. Simon, and R. J. Anderson* C721

Volume regulatory taurine release in human tracheal 9HTEo$^-$ and multidrug resistant 9HTEo$^-$/Dx cells
*L. J. V. Galietta, G. Romeo, and O. Zegarra-Moran* C728

Positive charge modifications alter the ability of XIP to inhibit the plasma membrane calcium pump
*W. Xu, C. Gatto, and M. A. Milanick* C736

Adult human chondrocytes cultured in alginate form a matrix similar to native human articular cartilage
*H. J. Häuselmann, K. Masuda, E. B. Hunziker, M. Neidhart, S. S. Mok, B. A. Michel, and E. J.-M. A. Thonar* C742

Cellular localization and regulation of CHIF in kidney and colon
*C. Capurro, N. Coutry, J.-P. Bonvalet, B. Escoubet, H. Garty, and N. Farman* C753

Role of tyrosine kinase pathways in $ET_B$ receptor activation of NHE3
*T.-S. Chu, H. Tsuganezawa, Y. Peng, A. Cano, M. Yanagisawa, and R. J. Alpern* C763

Characteristics of $Ca^{2+}$ release for activation of $K^+$ current and contractile system in some smooth muscles
*Y. Imaizumi, S. Henmi, Y. Uyama, K. Atsuki, Y. Torii, Y. Ohizumi, and M. Watanabe* C772

Recovery of protein secretion after brefeldin A treatment of rat lacrimal glands: effect of cAMP
*P. Robin, B. Rossignol, and M.-N. Raymond* C783

Modulation of $Ca^{2+}$ current in canine colonic myocytes by cyclic nucleotide-dependent mechanisms
*S. D. Koh and K. M. Sanders* C794

Impairment of insulin secretion in pancreatic islets isolated from Walker 256 tumor-bearing rats
*S. El Razi Neto, T. M. T. Zorn, R. Curi, and A. R. Carpinelli* C804

$H_2O_2$ modulates twitch tension and increases $P_o$ of $Ca^{2+}$ release channel in frog skeletal muscle
*T. Oba, M. Koshita, and M. Yamaguchi* C810

Modulation of frog skeletal muscle $Ca^{2+}$ release channel gating by anion channel blockers
*T. Oba, M. Koshita, and D. F. Van Helden* C819

Amino-terminal processing of the catalytic subunit from $Na^+$-$K^+$-ATPase
*T. A. Pressley, J. C. Allen, C. H. Clarke, T. Odebunmi, and S. C. Higham* C825

Buffering of plasmalemmal $Ca^{2+}$ current by sarcoplasmic reticulum of guinea pig urinary bladder myocytes
*A. Yoshikawa, C. van Breemen, and G. Isenberg* C833

High permeation of L-type $Ca^{2+}$ channels at physiological $[Ca^{2+}]$: homogeneity and dependence on the $\alpha_1$-subunit
*M. Gollasch, C. Ried, M. Liebold, H. Haller, F. Hofmann, and F. C. Luft* C842

Interleukin-1-induced nitric oxide production modulates glutathione synthesis in cultured rat hepatocytes
*P. C. Kuo, K. Y. Abe, and R. A. Schroeder* C851

Temperature modulation of calcium channel function in $GH_3$ cells
*A. D. Rosen* C863

Endothelin-1-evoked arachidonic acid release: a $Ca^{2+}$-dependent pathway
*J. R. Wu-Wong, B. D. Dayton, and T. J. Opgenorth* C869

Effect of intracellular pH on force development depends on temperature in intact skeletal muscle from mouse
*R. W. Wiseman, T. W. Beck, and P. B. Chase* C878

Detergent-resistant membrane microdomains from Caco-2 cells do not contain caveolin
*C. Mirre, L. Monlauzeur, M. Garcia, M.-H. Delgrossi, and A. Le Bivic* C887

Modulation of phospholipase C pathway and level of $G_q\alpha/G_{11}\alpha$ in rat myometrium during gestation
*S. Lajat, Z. Tanfin, G. Guillon, and S. Harbon* C895

Identification of muscarinic receptor subtypes in mouse parotid gland
*E. L. Watson, P. W. Abel, D. DiJulio, W. Zeng, M. Makoid, K. L. Jacobson, L. T. Potter, and F. J. Dowd* C905

Epidermal growth factor inhibits $Ca^{2+}$-dependent $Cl^-$ transport in T84 human colonic epithelial cells
*J. M. Uribe, C. M. Gelbmann, A. E. Traynor-Kaplan, and K. E. Barrett* C914

Thrombin-induced vascular reactivity is modulated by $ET_B$ receptor-coupled nitric oxide release in rat aorta
*H. I. Magazine and K. D. Srivastava* C923

Protein phosphatases independently regulate vesicle movement and microtubule subpopulations in hepatocytes
*S. F. Hamm-Alvarez, X. Wei, N. Berndt, and M. Runnegar* C929

Distribution of $Ca^{2+}$ channels on cochlear outer hair cells revealed by fluorescent dihydropyridines
*T. Oshima, K. Ikeda, M. Furukawa, N. Ueda, H. Suzuki, and T. Takasaka* C944

Absence of volume regulatory mechanisms contributes to the rapid activation of apoptosis in thymocytes
*C. D. Bortner and J. A. Cidlowski* C950

pH dependence of neutrophil-endothelial cell adhesion and adhesion molecule expression
*C. V. Serrano, Jr., A. Fraticelli, R. Paniccia, A. Teti, B. Noble, S. Corda, T. Faraggiana, R. C. Ziegelstein, J. L. Zweier, and M. C. Capogrossi* C962

Single-channel basis of slow inactivation of $Na^+$ channels in rat skeletal muscle
*R. L. Ruff* C971

Effects of cycloheximide on pancreatic endonuclease activity, apoptosis, and severity of acute pancreatitis
*A. M. Kaiser, A. K. Saluja, L. Lu, K. Yamanaka, Y. Yamaguchi, and M. L. Steer* C982

Fluid shear stress induces the phosphorylation of small heat shock proteins in vascular endothelial cells
*S. Li, R. S. Piotrowicz, E. G. Levin, Y. J. Shyy, and S. Chien* C994

## SPECIAL COMMUNICATION

Optimization of a mammalian expression system for the measurement of sodium channel gating currents
*M. F. Sheets, J. W. Kyle, S. Krueger, and D. A. Hanck* C1001

## No. 4. OCTOBER 1996

### INVITED REVIEW

Adenine nucleotide diphosphates: emerging second messengers acting via intracellular $Ca^{2+}$ release
*T. P. Dousa, E. N. Chini, and K. W. Beers* C1007

---

Effects of osteoclastic resorption on bone surface ion composition
*D. A. Bushinsky, K. Gavrilov, V. M. Stathopoulos, N. S. Krieger, J. M. Chabala, and R. Levi-Setti* C1025

Effects of aging on sarcoplasmic reticulum function and contraction duration in skeletal muscles of the rat
*N. Narayanan, D. L. Jones, A. Xu, and J. C. Yu* C1032

Electrolyte transport mechanisms involved in regulatory volume increase in C6 glioma cells
*I. Mountian, K.-Y. Chou, and W. Van Driessche* C1041

Modulation of K-Cl cotransport in volume-clamped low-K sheep erythrocytes by pH, magnesium, and ATP
*O. Ortiz-Carranza, N. C. Adragna, and P. K. Lauf* C1049

Prolactin enables normal development of ACh-stimulated current in cultured larval bullfrog skin
*M. Takada, H. Yai, K. Takayama-Arita, and S. Komazaki* C1059

Role of $PLA_2$, PLC, and PLD in bradykinin-induced release of arachidonic acid in MDCK cells
*C. R. J. Kennedy, P. R. Proulx, and R. L. Hébert* C1064

ET-1 induces IL-6 gene expression in human umbilical vein endothelial cells: synergistic effect of IL-1
*J. Stankova, P. D'Orléans-Juste, and M. Rola-Pleszczynski* C1073

Aldosterone and insulin stimulate amiloride-sensitive sodium transport in A6 cells by additive mechanisms
*R. D. Record, M. Johnson, S. Lee, and B. L. Blazer-Yost* C1079

Delayed neuronal death in ischemic hippocampus involves stimulation of protein tyrosine phosphorylation
*T. Ohtsuki, M. Matsumoto, K. Kitagawa, T. Mabuchi, K. Mandai, K. Matsushita, K. Kuwabara, M. Tagaya, S. Ogawa, H. Ueda, T. Kamada, and T. Yanagihara* C1085

Nitric oxide donor SIN-1 inhibits insulin release
*Å. Sjöholm* C1098

Metallothionein is a component of exocrine pancreas secretion: implications for zinc homeostasis
*R. C. De Lisle, M. P. Sarras, Jr., J. Hidalgo, and G. K. Andrews* C1103

K($^{86}$Rb) transport heterogeneity in the low-density fraction of sickle cell anemia red blood cells
*Z. Etzion, V. L. Lew, and R. M. Bookchin* C1111

Reversal of glibenclamide and voltage block of an epithelial $K_{ATP}$ channel
*O. Mayorga-Wark, W. P. Dubinsky, and S. G. Schultz* C1122

Inadequacy of high $K^+$/nigericin for calibrating BCECF. I. Estimating steady-state intracellular pH
*G. Boyarsky, C. Hanssen, and L. A. Clyne* C1131

Inadequacy of high $K^+$/nigericin for calibrating BCECF. II. Intracellular pH dependence of the correction
*G. Boyarsky, C. Hanssen, and L. A. Clyne* C1146

Increased contractile activity decreases RNA-protein interaction in the 3′-UTR of cytochrome *c* mRNA
*Z. Yan, S. Salmons, Y. L. Dang, M. T. Hamilton, and F. W. Booth* C1157

Changes in ATP, phosphocreatine, and 16 metabolites in muscle stimulated for up to 96 hours
*S. Salmons, J. C. Jarvis, C. N. Mayne, M. M.-Y. Chi, J. K. Manchester, D. B. McDougal, Jr., and O. H. Lowry* C1167

Hypoxia-inducible factor 1 levels vary exponentially over a physiologically relevant range of $O_2$ tension
*B.-H. Jiang, G. L. Semenza, C. Bauer, and H. H. Marti* C1172

Plasticity and stressor specificity of osmotic and heat shock responses of *Gillichthys mirabilis* gill cells
*D. Kültz* C1181

Diacylglycerols derived from membrane phospholipids are metabolized by lipases in A10 smooth muscle cells
*I. Migas and D. L. Severson* C1194

Iloprost activates $K_{Ca}$ channels of vascular smooth muscle cells: role of cAMP-dependent protein kinase
*R. Schubert, V. N. Serebryakov, H. Engel, and H.-H. Hopp* C1203

Mechanisms of ANG II-induced mitogenic responses: role of 12-lipoxygenase and biphasic MAP kinase
*Y. Wen, J. L. Nadler, N. Gonzales, S. Scott, E. Clauser, and R. Natarajan* C1212

Characterization of inwardly rectifying potassium currents from dissociated rat taste receptor cells
*X.-D. Sun and M. S. Herness* C1221

Electrophysiological and functional effects of adenosine on ventricular myocytes of various mammalian species
*Y. Song and L. Belardinelli* C1233

Glucose and pyruvate regulate cytokine-induced nitric oxide production by cardiac myocytes
*C. V. Oddis and M. S. Finkel* C1244

Expression of hybrid isomyosins in human skeletal muscle
*M. Wada, T. Okumoto, K. Toro, K. Masuda, T. Fukubayashi, K. Kikuchi, S. Niihata, and S. Katsuta* C1250

Potentiation by thyroxine of interferon-γ-induced antiviral state requires PKA and PKC activities
*H.-Y. Lin, H. R. Thacore, F. B. Davis, and P. J. Davis* C1256

IL-1 stimulates intestinal myofibroblast *COX* gene expression and augments activation of $Cl^-$ secretion in T84 cells
*T. A. Hinterleitner, J. I. Saada, H. M. Berschneider, D. W. Powell, and J. D. Valentich* C1262

$TXA_2$ agonists inhibit high-voltage-activated calcium channels in rat hippocampal CA1 neurons
*K. S. Hsu, C. C. Huang, W. M. Kan, and P. W. Gean* C1269

Role of reactive oxygen metabolites in murine peritoneal macrophage phagocytosis and phagocytic killing
*S. Takao, E. H. Smith, D. Wang, C. K. Chan, G. B. Bulkley, and A. S. Klein* C1278

Intercellular calcium waves in rat pancreatic acini: mechanism of transmission
*D. I. Yule, E. Stuenkel, and J. A. Williams* C1285

Maturation effects on the NMR microimaging characteristics of single neurons
*N. R. Aiken, E. W. Hsu, A. Horsman, and S. J. Blackband* C1295

Cell-specific expression of amiloride-sensitive, $Na^+$-conducting ion channels in the kidney
*F. Ciampolillo, D. E. McCoy, R. B. Green, K. H. Karlson, A. Dagenais, R. S. Molday, and B. A. Stanton* C1303

Endotoxin induces cardiac HSP70 and resistance to endotoxemic myocardial depression in rats
*X. Meng, J. M. Brown, L. Ao, S. K. Nordeen, W. Franklin, A. H. Harken, and A. Banerjee* C1316

A critical evaluation of resting intracellular free calcium regulation in dystrophic *mdx* muscle
*F. W. Hopf, P. R. Turner, W. F. Denetclaw, Jr., P. Reddy, and R. A. Steinhardt* C1325

Angiotensin II stimulates T-type $Ca^{2+}$ channel currents via activation of a G protein, $G_i$
*H.-K. Lu, R. J. Fern, D. Luthin, J. Linden, L.-P. Liu, C. J. Cohen, and P. Q. Barrett* C1340

Developmental shift of myosin heavy chain mRNA expression due to neural factor(s) and muscle activity
*B. Camoretti-Mercado, Y. Qin, S. Jakovcic, E. Salazar-Grueso, and R. Zak* C1350

Intracellular pH regulation in detubulated frog skeletal muscle fibers
*R. W. Putnam* C1358

Membrane domain localization of pH-regulating transporters in frog skeletal muscle membrane vesicles
*R. W. Putnam, P. B. Douglas, and N. A. Ritucci* C1367

Contribution of mitochondrial proton leak to skeletal muscle respiration and to standard metabolic rate
*D. F. S. Rolfe and M. D. Brand* C1380

## MODELING IN PHYSIOLOGY

Modeling spiral $Ca^{2+}$ waves in single cardiac cells: role of the spatial heterogeneity created by the nucleus
*G. Dupont, J. Pontes, and A. Goldbeter* C1390

## SPECIAL COMMUNICATION

An equibiaxial strain system for cultured cells
*A. A. Lee, T. Delhaas, L. K. Waldman, D. A. MacKenna, F. J. Villarreal, and A. D. McCulloch* C1400

## RAPID COMMUNICATION

Activity-dependent induction of slow myosin gene expression in isolated fast-twitch mouse muscle
*E. R. Barton-Davis, W. A. LaFramboise, and M. J. Kushmerick* C1409

# No. 5. NOVEMBER 1996

## INVITED REVIEWS

Interpretation of extraordinary kinetics of $Na^+$-$K^+$-ATPase by a phase change
*R. L. Post and I. Klodos* C1415

Nitric oxide, superoxide, and peroxynitrite: the good, the bad, and the ugly
*J. S. Beckman and W. H. Koppenol* C1424

Contraction-induced injury to single fiber segments from fast and slow muscles of rats by single stretches
*P. C. D. Macpherson, M. A. Schork, and J. A. Faulkner* C1438

Myosin heavy chain turnover in cultured neonatal rat heart cells: effects of $[Ca^{2+}]_i$ and contractile activity
*K. L. Byron, J. L. Puglisi, J. R. Holda, D. Eble, and A. M. Samarel* C1447

Inhibition of amiloride-sensitive $Na^+$ channel by isothiouronium derivatives
*A. Avigdor, C. Asher, D. M. Tal, S. J. D. Karlish, and H. Garty* C1457

ATP activates K and Cl channels via purinoceptor-mediated release of $Ca^{2+}$ in human coronary artery smooth muscle
*D. Strøbæk, P. Christophersen, S. Dissing, and S.-P. Olesen* C1463

Effects of intraluminal Ca load on the kinetics of $^{45}Ca$ uptake and efflux in brain microsomes
*K. M. Wells and R. F. Abercrombie* C1472

Creatine depletion elicits structural, biochemical, and physiological adaptations in rat costal diaphragm
*S. Levine, B. Tikunov, D. Henson, J. LaManca, and H. L. Sweeney* C1480

Mercuric chloride uncouples glutamate uptake from the countertransport of hydroxyl equivalents
*T. N. Nagaraja and N. Brookes* C1487

A voltage-operable current is involved in $Ca^{2+}$ entry in human lymphocytes whereas $I_{CRAC}$ has no apparent role
*J. J. Densmore, D. M. Haverstick, G. Szabo, and L. S. Gray* C1494

Lipoprotein-induced prostacyclin production in endothelial cells and effects of lipoprotein modification
*D. E. Myers, W.-N. Huang, and R. G. Larkins* C1504

Bicarbonate/chloride exchange and intracellular pH throughout preimplantation mouse embryo development
*Y. Zhao and J. M. Baltz* C1512

Nitric oxide and superoxide anion production during endothelial cell proliferation
*J.-F. Arnal, I. Tack, J.-P. Besombes, B. Pipy, and A. Nègre-Salvayre* C1521

Expression of *Drosophila melanogaster* P-glycoproteins is associated with ATP channel activity
*I. Bosch, G. R. Jackson, Jr., J. M. Croop, and H. F. Cantiello* C1527

Identification of a second region of the β-subunit involved in regulation of calcium channel inactivation
*N. Qin, R. Olcese, J. Zhou, O. A. Cabello, L. Birnbaumer, and E. Stefani* C1539

Presence of a metabotropic and an ionotropic purinergic receptor on rat submandibular ductal cells
*H. Amsallem, M. Métioui, A. VandenAbeele, A. Elyamani, A. Moran, and J.-P. Dehaye* C1546

Regulation of human erythrocyte $Na^+/H^+$ exchange by soluble and particulate guanylate cyclase
*V. Petrov and P. Lijnen* C1556

Expression of CFTR controls cAMP-dependent activation of epithelial $K^+$ currents
*G. Loussouarn, S. Demolombe, R. Mohammad-Panah, D. Escande, and I. Baró* C1565

Polarized expression of cAMP-activated chloride channels in isolated epithelial cells
*R. J. Torres, G. A. Altenberg, J. A. Cohn, and L. Reuss* C1574

A dihydropyridine-sensitive T-type $Ca^{2+}$ current is the main $Ca^{2+}$ current carrier in mouse primary spermatocytes
*C. M. Santi, A. Darszon, and A. Hernández-Cruz* C1583

Tyrosine phosphorylation of the dense plaque protein paxillin is regulated during smooth muscle contraction
*Z. Wang, F. M. Pavalko, and S. J. Gunst* C1594

$Na^+$-$K^+$-$2Cl^-$ cotransport, $Na^+/H^+$ exchange, and cell volume in ferret erythrocytes
*H. Mairbäurl and C. Herth* C1603

Theoretical and experimental discrimination between $Cl^-$-$H^+$ symporters and $Cl^-/OH^-$ antiporters
*F. Alvarado and M. Vasseur* C1612

Characterization of the rat $Na^+/H^+$ exchanger isoform NHE4 and localization in rat hippocampus
*C. Bookstein, M. W. Musch, A. DePaoli, Y. Xie, K. Rabenau, M. Villereal, M. C. Rao, and E. B. Chang* C1629

Biosynthesis and cell surface delivery of the NHE1 isoform of $Na^+/H^+$ exchanger in A6 cells
*B. Coupaye-Gerard, C. Bookstein, P. Duncan, X. Y. Chen, P. R. Smith, M. Musch, S. A. Ernst, E. B. Chang, and T. R. Kleyman* C1639

Evidence for a central role of transcription in the timing mechanism of a circadian clock
*S. B. S. Khalsa, D. Whitmore, B. Bogart, and G. D. Block* C1646

SR $Ca^{2+}$ pump heterogeneity in coronary artery: free radicals and $IP_3$-sensitive and -insensitive pools
*A. B. Elmoselhi, S. E. Samson, and A. K. Grover* C1652

Pharmacological activation changes stiffness of cultured human airway smooth muscle cells
*R. D. Hubmayr, S. A. Shore, J. J. Fredberg, E. Planus, R. A. Panettieri, Jr., W. Moller, J. Heyder, and N. Wang* C1660

Mechanism of activation by cGMP-dependent protein kinase of large $Ca^{2+}$-activated $K^+$ channels in mesangial cells
*J. D. Stockand and S. C. Sansom* C1669

Expression of the catalytic domain of myosin light chain kinase increases paracellular permeability
*G. Hecht, L. Pestic, G. Nikcevic, A. Koutsouris, J. Tripuraneni, D. D. Lorimer, G. Nowak, V. Guerriero, Jr., E. L. Elson, and P. de Lanerolle* C1678

Na-K-ATPase in lacrimal gland acinar cell endosomal system: correcting a case of mistaken identity
*J. P. Gierow, T. Yang, A. Bekmezian, N. Liu, J. M. Norian, S. A. Kim, S. Rafisolyman, H. Zeng, C. T. Okamoto, R. L. Wood, and A. K. Mircheff* C1685

cDNA cloning of a functional water channel from toad urinary bladder epithelium
*T. Ma, B. Yang, and A. S. Verkman* C1699

Angiotensin II activation of $Ca^{2+}$-permeant nonselective cation channels in rat adrenal glomerulosa cells
*D. P. Lotshaw and F. Li* C1705

Functional identification of a sarcolemmal chloride channel from bovine tracheal smooth muscle
*D. Salvail, A. Alioua, and E. Rousseau* C1716

Caffeine- and carbachol-induced $Cl^-$ and cation currents in single opossum esophageal circular muscle cells
*Q. Wang, H. I. Akbarali, N. Hatakeyama, and R. K. Goyal* C1725

Caerulein-stimulated arachidonic acid release in rat pancreatic acini: a diacylglycerol lipase affair
*W. Hou, Y. Arita, and J. Morisset* C1735

Connexin 32/38 chimeras suggest a role for the second half of inner loop in gap junction gating by low pH
*X. G. Wang and C. Peracchia* C1743

Negative regulation of the rat Na-K-ATPase $\alpha_3$-subunit gene promoter by thyroid hormone
*H. He, S. Chin, K. Zhuang, R. Hartong, J. Apriletti, and G. Gick* C1750

A regulated calcium channel in apical membranes of renal proximal tubule cells
*M. I. N. Zhang and R. G. O'Neil* C1757

Outward $K^+$ current in epithelial cells isolated from intermediate portion of endolymphatic sac of guinea pigs
*D. Wu and N. Mori* C1765

**SPECIAL COMMUNICATION**

Sodium-glucose cotransporters display sodium- and phlorizin-dependent water permeability
*J. D. Loike, S. Hickman, K. Kuang, M. Xu, L. Cao, J. C. Vera, S. C. Silverstein, and J. Fischbarg* C1774

## No. 6. DECEMBER 1996

**INVITED REVIEW**

Mechanisms of inhibition of insulin release
*G. W. G. Sharp* C1781

$Na^+/Ca^{2+}$ exchange currents and SR $Ca^{2+}$ contents in postinfarction myocytes
*X.-Q. Zhang, D. L. Tillotson, R. L. Moore, R. Zelis, and J. Y. Cheung* C1800

Characterization of the rabbit renal $Na^+$-dicarboxylate cotransporter using antifusion protein antibodies
*A. M. Pajor and N. Sun* C1808

ATP activates a cation conductance and $Ca^{2+}$-dependent $Cl^-$ conductance in Hensen cells of guinea pig cochlea
*M. Sugasawa, C. Erostegui, C. Blanchet, and D. Dulon* C1817

Continuous contractile activity induces fiber type specific expression of HSP70 in skeletal muscle
*P. D. Neufer, G. A. Ordway, G. A. Hand, J. M. Shelton, J. A. Richardson, I. J. Benjamin, and R. S. Williams* C1828

Carbonic anhydrase and cardiac pH regulation
*J. I. Vandenberg, N. D. Carter, H. W. L. Bethell, A. Nogradi, Y. Ridderstråle, J. C. Metcalfe, and A. A. Grace* C1838

Effects of lost surface area on red blood cells and red blood cell survival in mice
*R. E. Waugh and I. H. Sarelius* C1847

Short-chain fatty acids inhibit cAMP-mediated chloride secretion in rat colon
*P. C. Dagher, R. W. Egnor, A. Taglietta-Kohlbrecher, and A. N. Charney* C1853

Proton currents in human eosinophils
*J. Schrenzel, D. P. Lew, and K.-H. Krause* C1861

Sensitivity of volume-sensitive $Cl^-$ conductance in human epithelial cells to extracellular nucleotides
*T. Tsumura, S. Oiki, S. Ueda, M. Okuma, and Y. Okada* C1872

Ibuprofen protects human endothelial cell prostaglandin H synthase from hydrogen peroxide
*D. A. Wessels and S. L. Hempel* C1879

CFTR-dependent membrane insertion is linked to stimulation of the CFTR chloride conductance
*A. Takahashi, S. C. Watkins, M. Howard, and R. A. Frizzell* C1887

Nuclear magnetic resonance microscopy of single neurons under hypotonic perturbation
*E. W. Hsu, N. R. Aiken, and S. J. Blackband* C1895

Changes of actin cytoskeleton during swelling and regulatory volume decrease in cultured astrocytes
*J. Morán, M. Sabanero, I. Meza, and H. Pasantes-Morales* C1901

Fiber-specific regulation of $Ca^{2+}$-ATPase isoform expression by thyroid hormone in rat skeletal muscle
*C. G. van der Linden, W. S. Simonides, A. Muller, W. J. van der Laarse, J. L. Vermeulen, M. J. Zuidwijk, A. F. Moorman, and C. van Hardeveld* C1908

Study of nonspecific cation channel coupled to $P_{2z}$ purinergic receptors using an acid load technique
*M. Lachish, E. Alzola, N. Chaib, M. Métioui, K. Grosfils, E. Kabré, A. Moran, A. Marino, and J. P. Dehaye* C1920

A role for a background sodium current in spontaneous action potentials and secretion from rat lactotrophs
*S. Sankaranarayanan and S. M. Simasko* C1927

Rapid effects of steroid hormones on free intracellular calcium in T84 colonic epithelial cells
*C. M. Doolan and B. J. Harvey* C1935

Ischemia-induced alterations in sarcoplasmic reticulum $Ca^{2+}$-ATPase activity in rat soleus and EDL muscles
*H. J. Green, N. H. McKee, A. J. Carvalho, and J. C. Dossett-Mercer* C1942

Mutations in the pore region of ROMK enhance $Ba^{2+}$ block
*H. Zhou, S. Chepilko, W. Schütt, H. Choe, L. G. Palmer, and H. Sackin* C1949

Effects of taxol on isolated rat hepatocyte metabolism
*A. Manzano, T. Roig, J. Bermúdez, and R. Bartrons* C1957

Both $M_1$ and $M_3$ receptors regulate exocrine secretion by mucous acini
*D. J. Culp, W. Luo, L. A. Richardson, G. E. Watson, and L. R. Latchney* C1963

Vascular endothelial growth factor affects permeability of brain microvessel endothelial cells in vitro
*W. Wang, M. J. Merrill, and R. T. Borchardt* C1973

Actin polymerization and depolymerization during apoptosis in HL-60 cells
*M. G. Levee, M. I. Dabrowska, J. L. Lelli, Jr., and D. B. Hinshaw* C1981

Ultrastructural and cytochemical characterization of cultured dogfish shark rectal gland cells
*J. D. Valentich, K. J. Karnaky, and T. W. Ecay* C1993

Annexin VI modulates $Ca^{2+}$ and $K^+$ conductances of spinal cord and dorsal root ganglion neurons
*J. M. Naciff, M. M. Behbehani, M. A. Kaetzel, and J. R. Dedman* C2004

Altered expression of myosin mRNA and protein in rat soleus and tibialis anterior following reinnervation
*K. A. Huey and S. C. Bodine* C2016

Myoglobin content and oxygen diffusion: model analysis of horse and steer muscle
*K. E. Conley and C. Jones* C2027

Induction of human myeloblastic ML-1 cell $G_1$ arrest by suppression of $K^+$ channel activity
*B. Xu, B. A. Wilson, and L. Lu* C2037

Altered contractility of urinary bladder in diabetic rabbits: relationship to reduced $Na^+$ pump activity
*S. Gupta, S. Yang, R. A. Cohen, R. J. Krane, and I. Saenz De Tejada* C2045

Oxygen dependence of respiration in coupled and uncoupled endothelial cells
*R. Steinlechner-Maran, T. Eberl, M. Kunc, R. Margreiter, and E. Gnaiger* C2053

## MODELING IN PHYSIOLOGY

$Ca^{2+}$-force relationship of frog skeletal muscle: a dynamic model for parameter estimation
*D. M. Shames, A. J. Baker, M. W. Weiner, and S. A. Camacho* C2062

## SPECIAL COMMUNICATION

L-Ascorbic acid regulates growth and metabolism of renal cells: improvements in cell culture
*G. Nowak and R. G. Schnellmann* C2072

*Subject Index to Volume 40* C2081
*Author Index to Volume 40* C2095

American Journal of Physiology:
Endocrinology and Metabolism

No. 1. JULY 1996

## INVITED REVIEW

Compartmentalization of protein traffic in insulin-sensitive cells
*K. V. Kandror and P. F. Pilch* E1

$T_3$ potentiates the adrenergic stimulation of type II 5′-deiodinase activity in cultured rat brown adipocytes
*A. Hernández and M. J. Obregón* E15

Galanin gene expression in radiothyroidectomy-induced thyrotroph adenomas
*J. F. Hyde, J. P. Moore, Jr., K. W. Drake, and D. G. Morrison* E24

Creatine ingestion favorably affects performance and muscle metabolism during maximal exercise in humans
*A. Casey, D. Constantin-Teodosiu, S. Howell, E. Hultman, and P. L. Greenhaff* E31

Metabolic response of type I and II muscle fibers during repeated bouts of maximal exercise in humans
*A. Casey, D. Constantin-Teodosiu, S. Howell, E. Hultman, and P. L. Greenhaff* E38

Adipose tissue stearoyl-CoA desaturase mRNA is increased by obesity and decreased by polyunsaturated fatty acids
*B. H. Jones, M. A. Maher, W. J. Banz, M. B. Zemel, J. Whelan, P. J. Smith, and N. Moustaïd* E44

Reciprocal GLUT-1 and GLUT-4 expression and glucose transport in denervated muscles
*A. Handberg, L. A. Megeney, K. J. A. McCullagh, L. Kayser, X.-X. Han, and A. Bonen* E50

Kinetic aspects of acetate metabolism in healthy humans using [1-$^{13}$C]acetate
*E. Pouteau, H. Piloquet, P. Maugeais, M. Champ, H. Dumon, P. Nguyen, and M. Krempf* E58

Involvement of G proteins in the effect of carbachol and cholecystokinin in rat pancreatic islets
*E. J. Verspohl and K. Herrmann* E65

Kinetic analysis of receptor-mediated endocytosis of G-CSF derivative, nartograstim, in rat bone marrow cells
*T. Kuwabara, S. Kobayashi, and Y. Sugiyama* E73

Role for GTP in glucose-induced phospholipase C activation in pancreatic islets
*J. Vadakekalam, M. E. Rabaglia, Q.-H. Chen, and S. A. Metz* E85

Perfused skeletal muscle contraction and metabolism improved by angiotensin II-mediated vasoconstriction
*S. Rattigan, K. A. Dora, A. C. Y. Tong, and M. G. Clark* E96

Expression of $AT_{1A}$ and $AT_{1B}$ angiotensin II receptor messenger RNA in forebrain of 2-wk-old rats
*O. Jöhren and J. M. Saavedra* E104

Role of nitric oxide resistance in erythropoietin-induced hypertension in rats with chronic renal failure
*N. D. Vaziri, X. J. Zhou, F. Naqvi, J. Smith, F. Oveisi, Z. Q. Wang, and R. E. Purdy* E113

Effects of pulsatile delivery of basal growth hormone on lipolysis in humans
*E. Cersosimo, F. Danou, M. Persson, and J. M. Miles* E123

Direct effects of catecholamines on hepatic glucose production in conscious dog are due to glycogenolysis
*C. A. Chu, D. K. Sindelar, D. W. Neal, and A. D. Cherrington* E127

Microdialysis measurements in skin: evidence for significant lactate release in healthy humans
*P-A. Jansson, A. L. Krogstad, and P. Lönnroth* E138

Role of the lactate transporter (MCT1) in skeletal muscles
*K. J. A. McCullagh, R. C. Poole, A. P. Halestrap, M. O'Brien, and A. Bonen* E143

Dexamethasone rapidly increases hypothalamic neuropeptide Y secretion in adrenalectomized *ob/ob* mice
*H.-L. Chen and D. R. Romsos* E151

Response of phospho*enol*pyruvate cycle activity to fasting and to hyperinsulinemia in human subjects
*R. R. Wolfe, D. Chinkes, H. Baba, J. Rosenblatt, and X. Zhang* E159

Effects of circulating IGF-I on glucose and amino acid kinetics in the ovine fetus
*E. A. Liechty, D. W. Boyle, H. Moorehead, W.-H. Lee, R. R. Bowsher, and S. C. Denne* E177

Fetal substrate uptake during increased ovine fetal cortisol concentration
*J. R. Milley* E186

Control of cell proliferation in the rat adrenal gland in vivo by the renin-angiotensin system
*P. E. McEwan, G. B. Lindop, and C. J. Kenyon* E192

Lack of effect of an acute ileal perfusion of short-chain fatty acids on glucose metabolism in healthy men
*C. Alamowitch, J. Boillot, A. Boussairi, A. Ruskone-Fourmestraux, A. Chevalier, S. W. Rizkalla, F. Guyon, F. R. J. Bornet, and G. Slama* E199

**RAPID COMMUNICATION**

Fluid flow stimulates rapid and continuous release of nitric oxide in osteoblasts
*D. L. Johnson, T. N. McAllister, and J. A. Frangos* E205

## No. 2. AUGUST 1996

Appetite regulation by carbohydrate: role of blood glucose and gastrointestinal hormones
*J. H. Lavin, G. Wittert, W.-M. Sun, M. Horowitz, J. E. Morley, and N. W. Read* E209

Neural and pancreatic influences on net hepatic glucose uptake and glycogen synthesis
*M. C. Moore, L. Rossetti, M. J. Pagliassotti, M. Monahan, C. Venable, D. Neal, and A. D. Cherrington* E215

Effects of refeeding of undernourished and insulin treatment of diabetic neonatal rats on IGF and IGFBP
*L. Goya, F. Rivero, M. A. Martín, R. Arahuetes, E. R. Hernández, and A. M. Pascual-Leone* E223

Gastrointestinal tract protein synthesis and mRNA levels for proteolytic systems in adult fasted rats
*S. E. Samuels, D. Taillandier, E. Aurousseau, Y. Cherel, Y. Le Maho, M. Arnal, and D. Attaix* E232

Dissociation of paraventricular NPY release and plasma corticosterone levels in rats under food deprivation
*T. Yoshihara, S. Honma, Y. Katsuno, and K. Honma* E239

Evidence for a circadian rhythm of insulin secretion
*G. Boden, J. Ruiz, J.-L. Urbain, and X. Chen* E246

Regulation of type II adenylyl cyclase mRNA in rabbit skeletal muscle by chronic motor nerve pacing
*C. E. Torgan and W. E. Kraus* E253

Relationships between sleep quality and glucose regulation in normal humans
*A. J. Scheen, M. M. Byrne, L. Plat, R. Leproult, and E. Van Cauter* E261

No. 3. SEPTEMBER 1996

## INVITED REVIEW

Regulation of insulin secretion by phospholipase C
*W. S. Zawalich and K. C. Zawalich* E409

---

Sequential insulin degradation in cultured fetal hepatocytes in relation to chloroquine-dependent events
*J.-L. Zachayus, S. Khan, and C. Plas* E417

No evidence for a role of reverse $Na^+$-$Ca^{2+}$ exchange in insulin release from mouse pancreatic islets
*M.-J. Garcia-Barrado, P. Gilon, Y. Sato, M. Nenquin, and J.-C. Henquin* E426

In vivo NMR evidence for moderate glucose accumulation in human skeletal muscle during hyperglycemia
*R. Roussel, G. Velho, P. G. Carlier, L. Jouvensal, and G. Bloch* E434

Presence of renin within intramitochondrial dense bodies of the rat adrenal cortex
*J. Peters, B. Kränzlin, S. Schaeffer, J. Zimmer, S. Resch, S. Bachmann, N. Gretz, and E. Hackenthal* E439

Cobalt but not hypoxia stimulates PDGF gene expression in rats
*M. Bucher, P. Sandner, K. Wolf, and A. Kurtz* E451

Glucagon-like peptide 1 undergoes differential tissue-specific metabolism in the anesthetized pig
*C. F. Deacon, L. Pridal, L. Klarskov, M. Olesen, and J. J. Holst* E458

IGFBP-3 proteolysis by plasmin, thrombin, serum: heparin binding, IGF binding, and structure of fragments
*B. A. Booth, M. Boes, and R. S. Bar* E465

Interaction between oxidative stress and γ-linolenic acid in impaired neurovascular function of diabetic rats
*N. E. Cameron and M. A. Cotter* E471

Chronic ethanol feeding in a high-fat diet decreases insulin-stimulated glucose transport in rat adipocytes
*J. J. Wilkes, L. L. DeForrest, and L. E. Nagy* E477

Reduced glucose effectiveness associated with reduced insulin release: an artifact of the minimal-model method
*D. T. Finegood and D. Tzur* E485

Effects of oral vs. iv glucose administration on splanchnic and extrasplanchnic $O_2$ uptake and blood flow
*T. Brundin, R. Bränström, and J. Wahren* E496

Euglycemic hyperinsulinemia and hyperaminoacidemia decrease skeletal muscle ubiquitin mRNA in goats
*D. Larbaud, E. Debras, D. Taillandier, S. E. Samuels, S. Temparis, C. Champredon, J. Grizard, and D. Attaix* E505

Regulation of peptide-chain initiation in muscle during sepsis by interleukin-1 receptor antagonist
*T. C. Vary, L. Voisin, and R. N. Cooney* E513

LIF and CNTF, which share the gp130 transduction system, stimulate hepatic lipid metabolism in rats
*K. Nonogaki, X.-M. Pan, A. H. Moser, J. Shigenaga, I. Staprans, N. Sakamoto, C. Grunfeld, and K. R. Feingold* E521

Acetaminophen glucuronidation accurately reflects gluconeogenesis in fasted dogs
*W. F. Schwenk and J. C. Kahl* E529

Mechanism of clearance and transfer of dipeptides by perfused human placenta
*S. A. Adibi, S. Schenker, and E. Morse* E535

Regulation of lipid metabolism in adipose tissue during early starvation
*J. S. Samra, M. L. Clark, S. M. Humphreys, I. A. Macdonald, and K. N. Frayn* E541

Desensitization of β-adrenergic receptors in adipocytes causes increased insulin sensitivity of glucose transport
*A. Green, R. M. Carroll, and S. B. Dobias* E271

Increased PTHRP production by a tyrosine kinase oncogene, Tpr-Met: role of the Ras signaling pathway
*F. Aklilu, M. Park, D. Goltzman, and S. A. Rabbani* E277

Increased lipid oxidation but normal muscle glycogen response to epinephrine in humans with IDDM
*N. Cohen, M. Halberstam, L. Rossetti, and H. Shamoon* E284

Glucose transport and cell surface GLUT-4 protein in skeletal muscle of the obese Zucker rat
*G. J. Etgen, Jr., C. M. Wilson, J. Jensen, S. W. Cushman, and J. L. Ivy* E294

Interactions between $^{2}H$ and $^{18}O$ natural abundance variations and DLW measurements of energy expenditure
*P. Ritz, T. J. Cole, P. S. W. Davies, G. R. Goldberg, and W. A. Coward* E302

Central interleukin-1 partially mediates endotoxin-induced changes in glucose metabolism
*C. H. Lang, R. Cooney, and T. C. Vary* E309

Effects of glucocorticoids on energy metabolism and food intake in humans
*P. A. Tataranni, D. E. Larson, S. Snitker, J. B. Young, J. P. Flatt, and E. Ravussin* E317

Effects of heparin on renal morphology and albuminuria in experimental diabetes
*S. M. Marshall, K. W. Hansen, R. Østerby, J. Frystyk, H. Ørskov, and A. Flyvbjerg* E326

Regulation of *obese* gene expression in KK mice and congenic lethal yellow obese KK$A^{y}$ mice
*M. Hayase, Y. Ogawa, G. Katsuura, H. Shintaku, K. Hosoda, and K. Nakao* E333

Role of different proteolytic pathways in degradation of muscle protein from streptozotocin-diabetic rats
*M. T. Pepato, R. H. Migliorini, A. L. Goldberg, and I. C. Kettelhut* E340

Levels of plasma $C_{19}$ steroids and 5α-reduced $C_{19}$ steroid glucuronides in primates, rodents, and domestic animals
*C. Guillemette, D. W. Hum, and A. Bélanger* E348

Cavernosal nerve stimulation in the rat reverses castration-induced decrease in penile NOS activity
*J. Lugg, C. Ng, J. Rajfer, and N. González-Cadavid* E354

## MODELING IN PHYSIOLOGY
## INVITED REVIEW

Contributions of modeling to understanding stimulus-secretion coupling in pancreatic β-cells
*A. Sherman* E362

## MODELING IN PHYSIOLOGY

Comparison of mass isotopomer dilution methods used to compute VLDL production in vivo
*D. L. Chinkes, A. Aarsland, J. Rosenblatt, and R. R. Wolfe* E373

Effect of glucose on uptake of radiolabeled glucose, 2-DG, and 3-*O*-MG by the perfused rat liver
*I. R. Sweet, L. Peterson, K. Kroll, C. J. Goodner, M. Berry, and M. M. Graham* E384

## RAPID COMMUNICATIONS

Pig pancreatic acinar cells possess predominantly the CCK-B receptor subtype
*J. Morisset, F. Levenez, T. Corring, O. Benrezzak, G. Pelletier, and E. Calvo* E397

Effects of exercise and insulin on mitogen-activated protein kinase signaling pathways in rat skeletal muscle
*L. J. Goodyear, P.-Y. Chang, D. J. Sherwood, S. D. Dufresne, and D. E. Moller* E403

Effect of overexpressing GLUT-1 and GLUT-4 on insulin- and contraction-stimulated glucose transport in muscle
*E. Jóhannsson, K. J. A. McCullagh, X.-X. Han, P. K. Fernando, J. Jensen, H. A. Dahl, and A. Bonen* E547

Modulation of β-adrenergic receptor-stimulated lipolysis in the heart by prostaglandins
*Y. Ruan, H. Kan, C. Cano, and K. U. Malik* E556

Diurnal pattern of the interrelationships among leucine oxidation, urea production, and hydrolysis in humans
*A. E. El-Khoury, A. M. Ajami, N. K. Fukagawa, T. E. Chapman, and V. R. Young* E563

Triacylglycerol synthesis in the different skeletal muscle fiber sections of the rat
*L. Budohoski, J. Gorski, K. Nazar, H. Kaciuba-Uscilko, and R. L. Terjung* E574

Growth hormone upregulates gastrin and peptide YY gene expression
*G. Gomez, V. Udupi, X. Qi, F. Lluis, S. Rajaraman, J. C. Thompson, and G. H. Greeley, Jr.* E582

Insulin resistance caused by hepatic cholinergic interruption and reversed by acetylcholine administration
*H. Xie and W. W. Lautt* E587

Intact glucose transport in morphologically altered denervated skeletal muscle from quadriplegic patients
*A.-K. Aksnes, N. Hjeltnes, E. Ö. Wahlström, A. Katz, J. R. Zierath, and H. Wallberg-Henriksson* E593

Exercise stimulates interleukin-6 secretion: inhibition by glucocorticoids and correlation with catecholamines
*D. A. Papanicolaou, J. S. Petrides, C. Tsigos, S. Bina, K. T. Kalogeras, R. Wilder, P. W. Gold, P. A. Deuster, and G. P. Chrousos* E601

## MODELING IN PHYSIOLOGY

Effect of a glucokinase inhibitor on energy production and insulin release in pancreatic islets
*I. R. Sweet, G. Li, H. Najafi, D. Berner, and F. M. Matschinsky* E606

## RAPID COMMUNICATION

Hyperleptinemia: an early sign of juvenile obesity. Relations to body fat depots and insulin concentrations
*S. Caprio, W. V. Tamborlane, D. Silver, C. Robinson, R. Leibel, S. McCarthy, A. Grozman, A. Belous, D. Maggs, and R. S. Sherwin* E626

## No. 4. OCTOBER 1996

Modulation of vascular tone and glycerol levels measured by in situ microdialysis in rat adipose tissue
*C. Darimont, P. Saint-Marc, G. Ailhaud, and R. Négrel* E631

Differential permeability of the BBB in acute EAE: enhanced transport of TNF-α
*W. Pan, W. A. Banks, M. K. Kennedy, E. G. Gutierrez, and A. J. Kastin* E636

In vivo effects of dexamethasone and sucrose on glucose transport (GLUT-4) protein tissue distribution
*L. Coderre, G. A. Vallega, P. F. Pilch, and S. R. Chipkin* E643

Effects of chronic renal failure on plasma clearance of insulin-like growth factor I, des-(1—3)IGF-I, and $LR^3IGF-I$
*C. M. Gillespie, S. J. Hazel, P. E. Walton, and A. A. Martin* E649

Insulin sensitivity and hemodynamic responses to insulin in Wistar-Kyoto and spontaneously hypertensive rats
*M. Pitre, A. Nadeau, and H. Bachelard* E658

Gastric antisecretory effect of serotonin: quantitation of release and site of action
*K. J. Lepard, J. Chi, J. R. Mohammed, S. Gidener, and R. L. Stephens, Jr.* E669

Effects of long-term hypoxemia on pituitary-adrenal function in fetal sheep
*J. Murotsuki, R. Gagnon, S. G. Matthews, and J. R. G. Challis* E678

Hormonal regulation of prostaglandin $F_{2\alpha}$ receptor gene expression in mouse ovary
*J. Sugatani, Y. Masu, M. Nishizawa, K. Sakamoto, T. Houtani, T. Sugimoto, and S. Ito* E686

Aluminum potentiates $P_i$ transport stimulation induced by fluoride in osteoblast-like cells
*T. Imai, D. Burgener, X. Zhen, J.-P. Bonjour, and J. Caverzasio* E694

Glucose-induced oscillatory insulin secretion in perifused rat pancreatic islets and clonal β-cells (HIT)
*B. A. Cunningham, J. T. Deeney, C. R. Bliss, B. E. Corkey, and K. Tornheim* E702

Glucose-induced transmigration of monocytes is linked to phosphorylation of PECAM-1 in cultured endothelial cells
*V. Rattan, Y. Shen, C. Sultana, D. Kumar, and V. K. Kalra* E711

Effects of amino acids on synthesis and degradation of skeletal muscle proteins in humans
*E. Svanberg, A.-C. Möller-Loswick, D. E. Matthews, U. Körner, M. Andersson, and K. Lundholm* E718

Decreased glucose-induced cAMP and insulin release in islets of diabetic rats: reversal by IBMX, glucagon, GIP
*N. Dachicourt, P. Serradas, M.-H. Giroix, M.-N. Gangnerau, and B. Portha* E725

Protein degradation and synthesis measured with multiple amino acid tracers in vivo
*P. Tessari, R. Barazzoni, M. Zanetti, M. Vettore, S. Normand, D. Bruttomesso, and B. Beaufrere* E733

Prevention of hyperglycemia in the Zucker diabetic fatty rat by treatment with metformin or troglitazone
*S. Sreenan, J. Sturis, W. Pugh, C. F. Burant, and K. S. Polonsky* E742

Effect of glutamine on leucine metabolism in humans
*R. G. Hankard, M. W. Haymond, and D. Darmaun* E748

Impaired insulin secretion and excessive hepatic glucose production are both early events in the diabetic GK rat
*F. Picarel-Blanchot, C. Berthelier, D. Bailbé, and B. Portha* E755

Progesterone induces changes in sleep comparable to those of agonistic $GABA_A$ receptor modulators
*M. Lancel, J. Faulhaber, F. Holsboer, and R. Rupprecht* E763

## MODELING IN PHYSIOLOGY

Application of probability-generating functions in evaluation of some isotopomer distributions
*S. Kotz* E773

Modeling a bivariate control system: LH and testosterone response to the GnRH antagonist antide
*K. E. Fattinger, D. Verotta, H. C. Porchet, A. Munafo, J.-Y. le Cotonnec, and L. B. Sheiner* E775

$^{13}C$ isotopomer model for estimation of anaplerotic substrate oxidation via acetyl-CoA
*F. M. H. Jeffrey, C. J. Storey, A. D. Sherry, and C. R. Malloy* E788

## No. 5. NOVEMBER 1996

Enhancement of $Ca^{2+}$ currents by GHRH and its relation to PKA and $[Ca^{2+}]_i$ in human GH-secreting adenoma cells
*T. Takei, K. Takano, J. Yasufuku-Takano, T. Fujita, and N. Yamashita* E801

Vagal hepatopancreatic reflex effect evoked by intraportal appearance of tGLP-1
*H. Nakabayashi, M. Nishizawa, A. Nakagawa, R. Takeda, and A. Niijima* E808

Alterations of plasma lactate and glucose metabolism in obese children
*C. Le Stunff and P.-F. Bougnères* E814

Carbohydrate ingestion augments skeletal muscle creatine accumulation during creatine supplementation in humans
*A. L. Green, E. Hultman, I. A. Macdonald, D. A. Sewell, and P. L. Greenhaff* E821

cAMP modulates glucocorticoid-induced protein accumulation and glucocorticoid receptor in cardiomyocytes
*A. Sato, K. E. Sheppard, M. J. Fullerton, and J. W. Funder* E827

Effects of epinephrine infusion on adipose tissue: interactions between blood flow and lipid metabolism
*J. S. Samra, E. J. Simpson, M. L. Clark, C. D. Forster, S. M. Humphreys, I. A. Macdonald, and K. N. Frayn* E834

Interferon-α downregulates expression of the oxytocin receptor in cultured human myometrial cells
*M. Maggi, A. Peri, E. Baldi, R. Mancina, S. Granchi, G. Fantoni, G. Finetti, G. Forti, C. C. Raggi, and M. Serio* E840

Interaction of exercise training and clenbuterol on GLUT-4 protein in muscle of obese Zucker rats
*C.-H. Kuo, Z. Ding, and J. L. Ivy* E847

Extracellular glucose distribution is not altered by insulin: analysis of plasma and interstitial L-glucose kinetics
*G. M. Steil, J. Richey, J. K. Kim, J. K. Wi, K. Rebrin, R. N. Bergman, and J. H. Youn* E855

Effect of low-level basal plus marked "pulsatile" hyperglycemia on insulin secretion in fetal sheep
*T. D. Carver, S. M. Anderson, P. W. Aldoretta, and W. W. Hay, Jr.* E865

GH and IGF-I differentially increase protein synthesis in skeletal muscle and jejunum of parenterally fed rats
*H.-C. Lo and D. M. Ney* E872

Prolactin stimulation of iodide uptake into mouse mammary gland explants
*J. A. Rillema and T. X. Yu* E879

The renin-angiotensin-aldosterone system in experimental mineralocorticoid-salt-induced cardiac fibrosis
*M. J. Young and J. W. Funder* E883

Glutamate transport modulation of paracellular permeability across LLC-$PK_1$-$F^+$ monolayers
*T. C. Welbourne, D. Chevalier, and X. Mu* E889

Exercise during pregnancy and maternal and fetal plasma corticosterone and androstenedione in rats
*K. A. Carlberg, B. L. Alvin, and A. R. Gwosdow* E896

Growth hormone-induced nuclear translocation of Stat-3 decreases with age: modulation by caloric restriction
*X. Xu and W. E. Sonntag* E903

Lactate stimulates progesterone secretion via an increase in cAMP production in exercised female rats
*S.-S. Lu, C.-P. Lau, Y.-F. Tung, S.-W. Huang, Y.-H. Chen, H.-C. Shih, S.-C. Tsai, C.-C. Lu, S.-W. Wang, J.-J. Chen, E. J. Chien, C.-H. Chien, and P. S. Wang* E910

A cross-sectional study on body composition and energy expenditure in women athletes during aging
*A. S. Ryan, B. J. Nicklas, and D. Elahi* E916

Expression of IGFBP-2, -3, and -4 mRNA during differentiation of Caco-2 colon epithelial cells
*A. Hoeflich, Y. Yang, S. Huber, W. Rascher, G. Koepf, W. F. Blum, P. Heinz-Erian, H. J. Kolb, and W. Kiess* E922

## MODELING IN PHYSIOLOGY

NONMEM improves group parameter estimation for the minimal model of glucose kinetics
*A. De Gaetano, G. Mingrone, and M. Castagneto* E932

## RAPID COMMUNICATION

Leptin is related to body fat content in male distance runners
*M. S. Hickey, R. V. Considine, R. G. Israel, T. L. Mahar, M. R. McCammon, G. L. Tyndall, J. A. Houmard, and J. F. Caro* E938

## No. 6. DECEMBER 1996

### INVITED REVIEW

Dual-energy X-ray absorptiometry body composition model: review of physical concepts
*A. Pietrobelli, C. Formica, Z. Wang, and S. B. Heymsfield* E941

---

Hepatic VLDL secretion of genetically obese Zucker rats is inhibited by a high-fat diet
*L. Oussadou, G. Griffaton, and A.-D. Kalopissis* E952

Postprandial leg and splanchnic fatty acid metabolism in nonobese men and women
*T. T. Nguyen, A. H. Mijares, C. M. Johnson, and M. D. Jensen* E965

Insulin-like growth factor I inhibits degradation and improves retention of protein in hindlimb muscle of lambs
*V. H. Oddy and P. C. Owens* E973

Fat and carbohydrate metabolism during exercise in elderly and young subjects
*S. Sial, A. R. Coggan, R. Carroll, J. Goodwin, and S. Klein* E983

Pancreatic islet blood flow in normal and obese-hyperglycemic (*ob/ob*) mice
*P.-O. Carlsson, A. Andersson, and L. Jansson* E990

Effects of morning rise in cortisol concentration on regulation of lipolysis in subcutaneous adipose tissue
*J. S. Samra, M. L. Clark, S. M. Humphreys, I. A. Macdonald, D. R. Matthews, and K. N. Frayn* E996

Measurement of interstitial muscle glucose and lactate concentrations during an oral glucose tolerance test
*M. Müller, A. Holmäng, O. K. Andersson, H. G. Eichler, and P. Lönnroth* E1003

Islet amyloid polypeptide and insulin gene expression are regulated in parallel by glucose in vivo in rats
*H. Mulder, B. Ahrén, and F. Sundler* E1008

Reversal of portacaval shunting normalizes brain energy consumption in most brain structures
*P. A. Hawkins, M. R. DeJoseph, and R. A. Hawkins* E1015

Regulation of rat $Na^+/P_i$ cotransporter-1 gene expression: the roles of glucose and insulin
*H. Li, P. Ren, M. Onwochei, R. J. Ruch, and Z. Xie* E1021

Effects and fate of human IGF-binding protein-5 in rat osteoblast cultures
*C. Schmid, I. Schläpfer, M. A. Gosteli-Peter, E. R. Froesch, and J. Zapf* E1029

Energy expenditure in obstructive sleep apnea: effects of treatment with continuous positive airway pressure
*K. Stenlöf, R. Grunstein, J. Hedner, and L. Sjöström* E1036

Calcium content and respiratory control index of skeletal muscle mitochondria during exercise and recovery
*K. Madsen, P. Ertbjerg, M. S. Djurhuus, and P. K. Pedersen* E1044

Reconstitution and characterization of two forms of cyclic nucleotide-gated channels from skeletal muscle
*L. C. Santy and G. Guidotti* E1051

Glutamine synthetase induction by glucocorticoids is preserved in skeletal muscle of aged rats
*D. Meynial-Denis, M. Mignon, A. Miri, J. Imbert, E. Aurousseau, D. Taillandier, D. Attaix, M. Arnal, and J. Grizard* E1061

Effect of perfusion rate on the time course of insulin-mediated skeletal muscle glucose uptake
*A. D. Baron, G. Brechtel-Hook, A. Johnson, J. Cronin, R. Leaming, and H. O. Steinberg* E1067

Disappearance of two major phosphatidylcholines from plasma is predominantly via LCAT and hepatic lipase
*R. D. Shamburek, L. A. Zech, P. S. Cooper, J. M. VandenBroek, and C. C. Schwartz* E1073

Acute postprandial changes in leucine metabolism as assessed with an intrinsically labeled milk protein
*Y. Boirie, P. Gachon, S. Corny, J. Fauquant, J.-L. Maubois, and B. Beaufrère* E1083

Diurnal rhythms and effects of fasting and refeeding on rat adipose tissue lipoprotein lipase
*M. Bergö, G. Olivecrona, and T. Olivecrona* E1092

Quantitative aspects of interorgan relationships among arginine and citrulline metabolism
*Y.-M. Yu, J. F. Burke, R. G. Tompkins, R. Martin, and V. R. Young* E1098

Glycerol production and utilization in humans: sites and quantitation
*B. R. Landau, J. Wahren, S. F. Previs, K. Ekberg, V. Chandramouli, and H. Brunengraber* E1110

Contributions of liver and kidneys to glycerol production and utilization in the dog
*S. F. Previs, S. K. Martin, J. W. Hazey, M. V. Soloviev, A. P. Keating, D. Lucas, F. David, J. Koshy, D. W. Kirschenbaum, K.-Y. Tserng, and H. Brunengraber* E1118

## LETTERS TO THE EDITOR

Glucose-6-phosphatase flux and the hepatic glucose balance model
*R. Rognstad; L. Rossetti* E1125

## RAPID COMMUNICATION

Altered muscle insulin sensitivity in the male offspring of protein-malnourished rats
*S. E. Ozanne, C. L. Wang, N. Coleman, and G. D. Smith* E1128

*Subject Index to Volume 34* E1135
*Author Index to Volume 34* E1145

# CORRIGENDA

*Volume 270, March 1996*
*Volume 33, March 1996*

*Pages E413–E418*: Peter J. Reeds, Douglas G. Burrin, Farook Jahoor, Linda Wykes, Joseph Henry, and Elizabeth M. Frazer. "Enteral glutamate is almost completely metabolized in first pass by the gastrointestinal tract of infant pigs." Page E418: an error was inadvertently made in the acknowledged attribution of financial support. The study was supported in part by the International Glutamate Technical Committee, not the International Dietary Glutamate Committee.

American Journal of Physiology:
Gastrointestinal and Liver Physiology

No. 1. JULY 1996

## INVITED REVIEW

Physiological mechanisms of cholecystokinin action on pancreatic secretion
*C. Owyang* G1

---

Structural requirements of CCK analogues to differentiate second messengers and pancreatic secretion
*Y. Tsunoda, H. Yoshida, and C. Owyang* G8

Edema and intrapancreatic trypsinogen activation precede glutathione depletion during caerulein pancreatitis
*T. Grady, A. Saluja, A. Kaiser, and M. Steer* G20

Nitric oxide attenuates endothelin-1-induced vasoconstriction in canine stomach
*J. G. Wood, Q. Zhang, Z. Y. Yan, and L. Y. Cheung* G27

Peptide YY receptor in submucosal and myenteric plexus synaptosomes of canine small intestine
*Y. K. Mao, Y. F. Wang, G. Ward, S. Cipris, E. E. Daniel, and T. J. McDonald* G36

Significance of peptic digestion in rat pancreatic secretory response to dietary protein
*D. Guan and G. M. Green* G42

Neural integration of jejunal motility and ion transport in nematode-infected ferrets
*B. Greenwood and J. M. Palmer* G48

Membrane cholesterol alters gallbladder muscle contractility in prairie dogs
*P. Yu, Q. Chen, P. Biancani, and J. Behar* G56

Fat absorption is not complete by midgut but is dependent on load of fat
*H. C. Lin, X.-T. Zhao, and L. Wang* G62

Positional specificity of defensin gene expression reveals Paneth cell heterogeneity in mouse small intestine
*D. Darmoul and A. J. Ouellette* G68

Role of transforming growth factor-β in the restitution of injured guinea pig gastric mucosa in vitro
*A. Yanaka, H. Muto, H. Fukutomi, S. Ito, and W. Silen* G75

Characterization of cytosolic $Ca^{2+}$ signaling in rat bile duct epithelia
*M. H. Nathanson, A. D. Burgstahler, A. Mennone, and J. L. Boyer* G86

A diet containing glycine improves survival in endotoxin shock in the rat
*K. Ikejima, Y. Iimuro, D. T. Forman, and R. G. Thurman* G97

Insulin potentiates mitogenic effect of epidermal growth factor on cultured guinea pig gastric mucous cells
*S. Ogihara, M. Yamada, T. Saito, M. Shono, and K. Rokutan* G104

Inhibition of binding to fatty acid binding protein reduces the intracellular transport of fatty acids
*B. A. Luxon* G113

Expression of PRL-1 nuclear PTPase is associated with proliferation in liver but with differentiation in intestine
*R. H. Diamond, C. Peters, S. P. Jung, L. E. Greenbaum, B. A. Haber, D. G. Silberg, P. G. Traber, and R. Taub* G121

Kinetics of cytokine expression during healing of acute colitis in mice
*L. A. Dieleman, C. O. Elson, G. S. Tennyson, and K. W. Beagley* G130

Effect of endotoxin on bile acid transport in rat liver: a potential model for sepsis-associated cholestasis
*R. H. Moseley, W. Wang, H. Takeda, K. Lown, L. Shick, M. Ananthanarayanan, and F. J. Suchy* G137

Carbachol, but not forskolin, increases mucosal-to-serosal transport of intact protein in rat ileum in vitro
*P. B. Bijlsma, A. J. Kiliaan, G. Scholten, M. Heyman, J. A. Groot, and J. A. J. M. Taminiau* G147

Pharmacokinetics and organ metabolism of carboxyamidated and glycine-extended gastrins in pigs
*C. P. Hansen, F. Stadil, L. Yucun, and J. F. Rehfeld* G156

Expression of the ornithine decarboxylase gene in response to asparagine in intestinal epithelial cells
*J.-Y. Wang, M. J. Viar, P. M. Blanner, and L. R. Johnson* G164

Physicochemical characteristics of emulsions during fat digestion in human stomach and duodenum
*M. Armand, P. Borel, B. Pasquier, C. Dubois, M. Senft, M. Andre, J. Peyrot, J. Salducci, and D. Lairon* G172

Changes in electrical and mechanical activity during ontogeny of the canine proximal colon
*S. M. Ward* G184

Adaptations of intestinal nutrient transport to chronic caloric restriction in mice
*D. M. Casirola, B. Rifkin, W. Tsai, and R. P. Ferraris* G192

Dynamics of arterial and portal venous flow interactions in perfused rat liver: an intravital microscopic study
*I. A. Sherman, J. A. Dlugosz, F. Barker, F. M. Sadeghi, and K. S. Pang* G201

Hexose transporter expression in rat small intestine: effect of diet on diurnal variations
*C. P. Corpe and C. F. Burant* G211

## SPECIAL COMMUNICATION

Measurement of proximal and distal gastric motility with magnetic resonance imaging
*W. Schwizer, R. Fraser, J. Borovicka, K. Asal, G. Crelier, P. Kunz, P. Boesiger, and M. Fried* G217

## No. 2. AUGUST 1996

### INVITED REVIEW

Neural reflexes controlling intestinal microcirculation
*S. Vanner and A. Surprenant* G223

Immunologic distribution of an organic anion transport protein in rat liver and kidney
*A. J. Bergwerk, X. Shi, A. C. Ford, N. Kanai, E. Jacquemin, R. D. Burk, S. Bai, P. M. Novikoff, B. Stieger, P. J. Meier, V. L. Schuster, and A. W. Wolkoff* G231

Regulation of cell volume in a human biliary cell line: activation of $K^+$ and $Cl^-$ currents
*R. M. Roman, Y. Wang, and J. G. Fitz* G239

Lipoprotein and apolipoprotein secretion by a newborn piglet intestinal cell line (IPEC-1)
*R. Gonzalez-Vallina, H. Wang, R. Zhan, H. M. Berschneider, R. M. Lee, N. O. Davidson, and D. D. Black* G249

Regulation of inducible nitric oxide synthase in hepatic sinusoidal endothelial cells
*D. C. Rockey and J. J. Chung* G260

Ontogeny of $K^+$ transport in rat distal colon
*R. I. Aizman, G. Celsi, L. Grahnquist, Z. M. Wang, Y. Finkel, and A. Aperia* G268

Interleukin-1β release from rat gastric fundus
*P. Montuschi, G. Tringali, A. Mirtella, L. Parente, E. Ragazzoni, P. Preziosi, and P. Navarra* G275

Endotoxin stimulates lymphocyte-endothelial interactions in rat intestinal Peyer's patches and villus mucosa
*S. Miura, Y. Tsuzuki, I. Kurose, M. Suematsu, T. Shigematsu, H. Kimura, H. Higuchi, H. Serizawa, H. Yagita, K. Okumura, D. N. Granger, and H. Ishii* G282

Hepatocellular protein kinase C activation by bile acids: implications for regulation of cholesterol 7α-hydroxylase
*R. T. Stravitz, Y.-P. Rao, Z. R. Vlahcevic, E. C. Gurley, W. D. Jarvis, and P. B. Hylemon* G293

$Ca^{2+}$-activated $Cl^-$ channels in a human biliary cell line: regulation by $Ca^{2+}$/calmodulin-dependent protein kinase
*T. Schlenker and J. G. Fitz* G304

$HCO_3^-$-dependent conformational change in gastric parietal cell AE2, a glycoprotein naturally lacking sialic acid
*A. S. Zolotarev, R. R. Townsend, A. Stuart-Tilley, and S. L. Alper* G311

Effects of lipid administration on lymphatic apolipoprotein A-IV and B output and synthesis
*M. Nishimura, M. Seishima, H. Ohashi, and A. Noma* G322

Regulation of AE2 $Cl^-/HCO_3^-$ exchanger during intestinal development
*A. Chow, W. Zhou, and R. Jacobson* G330

Effects of oral L-NAME during *Trichinella spiralis* infection in rats
*C. M. Hogaboam, S. M. Collins, and M. G. Blennerhassett* G338

Analysis of cloned cDNAs differentially expressed in adapting remnant small intestine after partial resection
*B. D. Dodson, J. L. Wang, E. A. Swietlicki, D. C. Rubin, and M. S. Levin* G347

Stoichiometry of neurally induced VIP release, NO formation, and relaxation in rabbit and rat gastric muscle
*J.-G. Jin, K. S. Murthy, J. R. Grider, and G. M. Makhlouf* G357

Nongenomic effects of progesterone on human intestinal smooth muscle cells
*K. Bielefeldt, L. Waite, F. M. Abboud, and J. L. Conklin* G370

Comparative analysis of the ontogeny of a sodium-dependent bile acid transporter in rat kidney and ileum
*D. M. Christie, P. A. Dawson, S. Thevananther, and B. L. Shneider* G377

## No. 3. SEPTEMBER 1996

Action potential generation in the small intestine of *W* mutant mice that lack interstitial cells of Cajal
*J. Malysz, L. Thuneberg, H. B. Mikkelsen, and J. D. Huizinga* G387

Autoregulatory capacity in the superior mesenteric artery is attenuated by nitric oxide
*M. P. Macedo and W. W. Lautt* G400

Detection of nitric oxide production and its role in pancreatic ischemia-reperfusion in rats
*S. Tanaka, W. Kamiike, H. Kosaka, T. Ito, E. Kumura, T. Shiga, and H. Matsuda* G405

Bidirectional transport of cholesterol between gallbladder epithelial cells and model bile
*A. Hayashi and S. P. Lee* G410

Transport of *n*-butyrate into human colonic luminal membrane vesicles
*J. M. Harig, E. K. Ng, P. K. Dudeja, T. A. Brasitus, and K. Ramaswamy* G415

Neural control of canine small intestinal motility during nonnutrient infusion
*K. E. Behrns, M. G. Sarr, R. B. Hanson, and A. R. Zinsmeister* G423

Regulation of colonic propulsion by enteric excitatory and inhibitory neurotransmitters
*A. E. Foxx-Orenstein and J. R. Grider* G433

Postabsorptive factors are important for satiation in rats after a lipid meal
*Y. Sakata, K. Fujimoto, S.-I. Ogata, T. Koyama, K. Fukagawa, T. Sakai, and P. Tso* G438

Regulation of Fe absorption by cultured intestinal epithelia (Caco-2) cell monolayers with varied Fe status
*V. Tapia, M. Arredondo, and M. T. Núñez* G443

Role of cholecystokinin as a regulator of solid and liquid gastric emptying in humans
*J. Borovicka, C. Kreiss, K. Asal, B. Remy, C. Mettraux, A. Wells, N. W. Read, J. B. Jansen, M. D'Amato, A. B. Delaloye, M. Fried, and W. Schwizer* G448

Decreased ileal muscle contractility and increased NOS II expression induced by lipopolysaccharide
*N. W. Weisbrodt, T. A. Pressley, Y.-F. Li, M. J. Zembowicz, S. C. Higham, A. Zembowicz, R. F. Lodato, and F. G. Moody* G454

Roles of ET-1 in endotoxin-induced microcirculatory disturbance in rat small intestine
*S. Miura, D. Fukumura, I. Kurose, H. Higuchi, H. Kimura, Y. Tsuzuki, T. Shigematsu, J.-Y. Han, M. Tsuchiya, and H. Ishii* G461

Gastrin mediates the gastric mucosal proliferative response to feeding
*G. V. Ohning, H. C. Wong, K. C. K. Lloyd, and J. H. Walsh* G470

The effect of GIP and glucagon-like peptides on intestinal basolateral membrane hexose transport
*C. I. Cheeseman and R. Tsang* G477

Intestinal distribution of human $Na^+/H^+$ exchanger isoforms NHE-1, NHE-2, and NHE-3 mRNA
*P. K. Dudeja, D. D. Rao, I. Syed, V. Joshi, R. Y. Dahdal, C. Gardner, M. C. Risk, L. Schmidt, D. Bavishi, K. E. Kim, J. M. Harig, J. L. Goldstein, T. J. Layden, and K. Ramaswamy* G483

Acute alcohol produces hypoxia directly in rat liver tissue in vivo: role of Kupffer cells
*G. E. Arteel, J. A. Raleigh, B. U. Bradford, and R. G. Thurman* G494

CCK-independent increases in pancreatic secretion induced by dietary protein in chronic BPJ-diverted rats
*H. Hara, T. Nishi, H. Narakino, and T. Kasai* G501

Effect of luminal epidermal growth factor on enterocyte glucose and proline transport
*J. A. Hardin, J. K. Wong, C. I. Cheeseman, and D. G. Gall* G509

Pituitary adenylate cyclase-activating polypeptide stimulates cholecystokinin secretion in STC-1 cells
*C. H. Chang, W. Y. Chey, L. Braggins, D. H. Coy, and T.-M. Chang* G516

Inhibition of acid secretion by electrical acupuncture is mediated via β-endorphin and somatostatin
*H. O. Jin, L. Zhou, K. Y. Lee, T.-M. Chang, and W. Y. Chey* G524

**RAPID COMMUNICATION**

Rab3D localizes to zymogen granules in rat pancreatic acini and other exocrine glands
*H. Ohnishi, S. A. Ernst, N. Wys, M. McNiven, and J. A. Williams* G531

## No. 4. OCTOBER 1996

Inhibition of nitric oxide synthase gene expression in vivo and in vitro by repeated doses of endotoxin
*C. C. Chang, C. C. McCormick, A. W. Lin, R. R. Dietert, and Y.-J. Sung* G539

Effects of increasing solid component size of a mixed solid/liquid meal on solid and liquid gastric emptying
*P. J. Collins, M. Horowitz, A. Maddox, J. C. Myers, and B. E. Chatterton* G549

A low-protein diet ameliorates disrupted diurnal locomotor activity in rats after portacaval anastomosis
*P. E. Steindl, D. L. Coy, B. Finn, P. C. Zee, and A. T. Blei* G555

Intrahepatic blood flow distribution in the perfused rat liver: effect of hepatic artery perfusion
*F. J. Burczynski, B. A. Luxon, and R. A. Weisiger* G561

Regulation of VIP release from rat enteric nerve terminals: evidence for a stimulatory effect of NO
*H. D. Allescher, M. Kurjak, A. Huber, P. Trudrung, and V. Schusdziarra* G568

Dynamic aspects of glutathione and nitric oxide metabolism in endotoxemic rats
*Y. Minamiyama, S. Takemura, K. Koyama, H. Yu, M. Miyamoto, and M. Inoue* G575

Interaction between prostanoids, NO, and VIP in modulation of duodenal alkaline secretion and motility
*M. Sababi, A. Hällgren, and O. Nylander* G582

Ondansetron reduces nausea induced by gastroduodenal stimulation without changing gastric motility
*C. Feinle and N. W. Read* G591

Nitric oxide modulates regional blood flow differences in the fetal gastrointestinal tract
*W. Q. Fan, J. J. Smolich, J. Wild, V. Y. H. Yu, and A. M. Walker* G598

Superior mesenteric artery blood flow and indomethacin-induced intestinal injury and inflammation
*H. D. Battarbee, M. B. Grisham, G. G. Johnson, and J. H. Zavecz* G605

Histamine $H_2$ receptor activates adenylate cyclase and PLC via separate GTP-dependent pathways
*L. Wang, I. Gantz, and J. DelValle* G613

Excessive NO production does not account for the inhibition of hepatic gluconeogenesis in endotoxemia
*J. Ou, L. Molina, Y.-M. Kim, and T. R. Billiar* G621

Cloning and expression of the large-conductance $Ca^{2+}$-activated $K^+$ channel from colonic smooth muscle
*F. Vogalis, T. Vincent, I. Qureshi, F. Schmalz, M. W. Ward, K. M. Sanders, and B. Horowitz* G629

Parietal cell MAP kinases: multiple activation pathways
*K. Nakamura, C.-J. Zhou, J. Parente, and C. S. Chew* G640

Regulation of cholecystokinin secretion in STC-1 cells by nitric oxide
*A. W. Mangel, L. Scott, V. Prpic, and R. A. Liddle* G650

Hydrolysis of membrane-bound liver alkaline phosphatase by GPI-PLD requires bile salts
*J. T. Deng, M. F. Hoylaerts, M. E. De Broe, and V. O. Van Hoof* G655

Phospholipase $A_2$ stimulation of rat intestinal epithelial cell (IEC-6) migration
*T. Minami, S. Zushi, Y. Shinomura, and Y. Matsuzawa* G664

Tumor necrosis factor-α induces $Cl^-$ and $K^+$ secretion in human distal colon driven by prostaglandin $E_2$
*H. Schmitz, M. Fromm, H. Bode, P. Scholz, E. O. Riecken, and J. D. Schulzke* G669

Effect of morphine and naloxone on motor response of the human esophagus to swallowing and distension
*R. Penagini, A. Picone, and P. A. Bianchi* G675

Ileal transposition into the upper jejunum affects lipid and bile salt absorption in rats
*T. Tsuchiya, T. J. Kalogeris, and P. Tso* G681

Cholecystokinin-induced protection against gastric injury is independent of endogenous somatostatin
*D. W. Mercer, K. Klemm, J. M. Cross, G. S. Smith, M. Cashman, and T. A. Miller* G692

GSH transport and GSH-dependent detoxication in small intestine of rats exposed in vivo to hypoxia
*C. Bai and D. P. Jones* G701

Regulation of sucrase and lactase in Caco-2 cells: relationship to nuclear factors SIF-1 and NF-LPH-1
*W. A. Olsen, M. Lloyd, H. Korsmo, and Y.-Z. He* G707

Enterostatin efflux in cat intestinal lymph: relation to lymph flow, hyaluronan, and fat absorption
*M. I. Townsley, C. Erlanson-Albertsson, A. Ohlsson, C. Rippe, and R. K. Reed* G714

## RAPID COMMUNICATION

Cell cycle protein suppression and p21 induction in differentiating Caco-2 cells
*B. M. Evers, T. C. Ko, J. Li, and E. A. Thompson* G722

## No. 5. NOVEMBER 1996

Regulation and function of extracellular matrix in intestinal epithelial restitution in vitro
*M. Göke, A. Zuk, and D. K. Podolsky* G729

ATP-dependent copper transporter, in the Golgi apparatus of rat hepatocytes, transports Cu(II) not Cu(I)
*M. J. Bingham, T. J. Ong, W. J. Ingledew, and H. J. McArdle* G741

Progesterone and estradiol inhibit CFTR-mediated ion transport by pancreatic epithelial cells
*N. B. Sweezey, C. Gauthier, S. Gagnon, E. Ferretti, and H. Kopelman* G747

Effect of cholecystokinin and related peptides on jejunal transepithelial hexose transport in the Sprague-Dawley rat
*A. J. Hirsh, R. Tsang, S. Kammila, and C. I. Cheeseman* G755

Impairment of Kit-dependent development of interstitial cells alters contractile responses of murine intestinal tract
*D. Sato, Z.-F. Lai, N. Tokutomi, Y. Tokutomi, H. Maeda, S. Nishikawa, S.-I. Nishikawa, M. Ogawa, and K. Nishi* G762

Expression of genes involved in iron metabolism in mouse intestine
*A. T. McKie, K. B. Raja, T. J. Peters, F. Farzaneh, and R. J. Simpson* G772

Differential regulation of hepatocyte DNA synthesis by cAMP in vitro and in vivo
*J. K. Westwick, J. Fleckenstein, M. Yin, S. Q. Yang, C. A. Bradham, D. A. Brenner, and A. M. Diehl* G780

ATP-dependent transport of β-estradiol 17-(β-D-glucuronide) in rat canalicular membrane vesicles
*M. Vore, T. Hoffman, and M. Gosland* G791

Evidence that endogenous GRP in rat stomach mediates omeprazole-induced hypergastrinemia
*Y. Takehara, K. Sumii, A. Tari, M. Yoshihara, M. Sumii, K. Haruma, G. Kajiyama, S. V. Wu, and J. H. Walsh* G799

Preservation of intestinal gene expression during hibernation
*H. V. Carey and S. L. Martin* G805

Hyperglycemia affects proximal gastric motor and sensory function during small intestinal triglyceride infusion
*G. S. Hebbard, M. Samsom, W. M. Sun, J. Dent, and M. Horowitz* G814

Hypoxia/reoxygenation selectively impairs $\alpha_{1b}$-adrenoceptor function in small mesenteric arteries
*H. Gao, R. J. Korthuis, and J. N. Benoit* G820

$M_1$ muscarinic mechanisms regulate intestinal-phase gallbladder physiology in humans
*D. K. Nelson, B. Glasbrenner, G. Dahmen, R. L. Riepl, P. Malfertheiner, and G. Adler* G824

Intracerebral adrenoceptor agonists influence rat duodenal mucosal bicarbonate secretion
*G. M. Larson, G. Jedstedt, O. Nylander, and G. Flemström* G831

Products of enteropathogenic *E. coli* inhibit lymphokine production by gastrointestinal lymphocytes
*J.-M. Klapproth, M. S. Donnenberg, J. M. Abraham, and S. P. James* G841

Participation of 5-$HT_3$, 5-$HT_4$, and nicotinic receptors in the peristaltic reflex of guinea pig distal colon
*M. Kadowaki, P. R. Wade, and M. D. Gershon* G849

Interactions of gastric vagal and peripheral nerves on single neurons of lateral hypothalamus in the cat
*C.-S. Yuan and W. D. Barber* G858

Gut adaptation and the insulin-like growth factor system: regulation by glutamine and IGF-I administration
*T. R. Ziegler, M. P. Mantell, J. C. Chow, J. L. Rombeau, and R. J. Smith* G866

Actions of calcitonin gene-related peptide in guinea pig gallbladder ganglia
*A. P. Gokin, L. J. Jennings, and G. M. Mawe* G876

Acute stress causes mucin release from rat colon: role of corticotropin releasing factor and mast cells
*I. Castagliuolo, J. T. LaMont, B. Qiu, S. M. Fleming, K. R. Bhaskar, S. T. Nikulasson, C. Kornetsky, and C. Pothoulakis* G884

Relationship between polyamines, actin distribution, and gastric healing in rats
*A. Banan, J.-Y. Wang, S. A. McCormack, and L. R. Johnson* G893

Endogenous NO inhibits NANC but not cholinergic neurotransmission to circular muscle of guinea pig ileum
*A. M. R. Yunker and J. J. Galligan* G904

Arginine degradation in developing porcine enterocytes
*G. Wu, D. A. Knabe, N. E. Flynn, W. Yan, and S. P. Flynn* G913

Endocytosis and $Ca^{2+}$ are required for endotoxin-stimulated TNF-α release by rat Kupffer cells
*S. N. Lichtman, J. Wang, C. Zhang, and J. J. Lemasters* G920

**RAPID COMMUNICATION**

Evidence for a functional link between stress response and vascular control in hepatic portal circulation
*M. Bauer, B. H. J. Pannen, I. Bauer, C. Herzog, G. A. Wanner, R. Hanselmann, J. X. Zhang, M. G. Clemens, and R. Larsen* G929

## No. 6. DECEMBER 1996

Esophageal sensation in spinal cord-injured patients: balloon distension and cerebral evoked potential recording
*K. R. DeVault, S. Beacham, D. O. Castell, L. J. Streletz, and J. F. Ditunno* G937

Fos is required for EGF stimulation of the gastrin promoter
*P. Marks, G. Iyer, Y. Cui, and J. L. Merchant* G942

Involvement of ICE family proteases in apoptosis induced by reoxygenation of hypoxic hepatocytes
*S. Shimizu, Y. Eguchi, W. Kamiike, Y. Akao, H. Kosaka, J.-I. Hasegawa, H. Matsuda, and Y. Tsujimoto* G949

Structure, glycosylation, and localization of rat intestinal guanylyl cyclase C: modulation by fasting
*L. A. Scheving, W. E. Russell, and K.-M. Chong* G959

Simultaneous manipulation of intestinal capacities and nutrient loads in mice
*K. A. Hammond, M. Lam, K. C. K. Lloyd, and J. Diamond* G969

Tumor necrosis factor unresponsiveness after surgery in bile duct-ligated rats
*A. P. J. Houdijk, M. A. Boermeester, R. I. C. Wesdorp, C. E. Hack, and P. A. M. Van Leeuwen* G980

Effects of neuropeptide Y and substance P on antigen-induced ion secretion in rat jejunum
*D. M. McKay, M. C. Berin, J. D. Fondacaro, and M. H. Perdue* G987

HIP/PAP is an adhesive protein expressed in hepatocarcinoma, normal Paneth, and pancreatic cells
*L. Christa, F. Carnot, M.-T. Simon, F. Levavasseur, M.-G. Stinnakre, C. Lasserre, D. Thépot, B. Clément, E. Devinoy, and C. Bréchot* G993

Electrophysiological characterization of a motilin agonist, GM611, on rabbit duodenal smooth muscle
*K. Yamada, S. Chen, N. A. Abdullah, M. Tanaka, Y. Ito, and R. Inoue* G1003

Tachykinin-induced increase in gastric mucosal resistance: role of primary afferent neurons, CGRP, and NO
*T. Stroff, S. Plate, J. S. Ebrahim, K.-H. Ehrlich, M. Respondek, and B. M. Peskar* G1017

Adenosine $A_2$-receptor mediates ethanol-induced arteriolar dilation in rat stomach
*H. Nagata, E. Sekizuka, T. Morishita, M. Tatemichi, T. Kurokawa, A. Mizuki, and H. Ishii* G1028

Effects of potassium on magnesium transport across rumen epithelium
*S. Leonhard-Marek and H. Martens* G1034

Continuous measurement of gastric nitric oxide production
*A. Åneman, J. Snygg, L. Fändriks, and A. Pettersson* G1039

Ethinyl estradiol cholestasis involves alterations in expression of liver sinusoidal transporters
*F. R. Simon, J. Fortune, M. Iwahashi, C. Gartung, A. Wolkoff, and E. Sutherland* G1043

$Ca^{2+}$ role in myogenic and neurogenic activities of canine ileum circular muscle
*F. S. Cayabyab, H. deBruin, M. Jiménez, and E. E. Daniel* G1053

Effect of surface and intracellular pH on hepatocellular fatty acid uptake
*C. Elsing, A. Kassner, and W. Stremmel* G1067

CFTR expression and mucin secretion in cultured mouse gallbladder epithelial cells
*R. H. P. C. Peters, P. J. French, J. H. van Doorninck, G. Lamblin, R. Ratcliff, M. J. Evans, W. H. Colledge, J. Bijman, and B. J. Scholte* G1074

Regulation of taurocholate and ursodeoxycholate uptake in hamster hepatocytes by $Ca^{2+}$-mobilizing agents
*B. Bouscarel, S. Reza, L. A. Dougherty, H. Fromm, and R. Nussbaum* G1084

Evidence for $Cl^-$-independent $HCO_3^-$ transport in basolateral membranes of *Necturus* oxyntopeptic cells
*M. E. Klingensmith, R. R. Cima, A. E. Gadacz, and D. I. Soybel* G1096

Canine $H^+$-$K^+$-ATPase α-subunit gene promoter: studies with canine parietal cells in primary culture
*A. Muraoka, M. Kaise, Y.-J. Guo, J. Yamada, I. Song, J. DelValle, A. Todisco, and T. Yamada* G1104

*Subject Index to Volume 34* G1115
*Author Index to Volume 34* G1125

# American Journal of Physiology: Lung Cellular and Molecular Physiology

**No. 1. JULY 1996**


## INVITED REVIEW


Biophysical and molecular properties of amiloride-inhibitable $Na^+$ channels in alveolar epithelial cells
*S. Matalon, D. J. Benos, and R. M. Jackson* L1

---

Nitric oxide alters metabolism in isolated alveolar type II cells
*P. R. Miles, L. Bowman, and L. Huffman* L23

Regulation of ornithine decarboxylase by hypoxia in pulmonary artery smooth muscle cells
*K. S. Harrod, J. W. Olson, and M. N. Gillespie* L31

Alteration of lung atrial natriuretic peptide receptors in genetic cardiomyopathy
*S. Mukaddam-Daher, J. Tremblay, N. Fujio, C. Koch, M. Jankowski, E. W. Quillen, Jr., and J. Gutkowska* L38

Hepatocyte growth factor is a mitogen for alveolar type II cells in rat lavage fluid
*R. J. Mason, K. McCormick-Shannon, J. S. Rubin, T. Nakamura, and C. C. Leslie* L46

Dynamics of TGF-β3 peptide activity during rat alveolar epithelial cell proliferative recovery from acute hyperoxia
*S. Buckley, K. C. Bui, M. Hussain, and D. Warburton* L54

Fibronectin modulates expression of interleukin-1β and its receptor antagonist in human mononuclear cells
*K. L. Graves and J. Roman* L61

Inhibition of Na-K-ATPase activity after prolonged hypoxia in an alveolar epithelial cell line
*C. Planès, G. Friedlander, A. Loiseau, C. Amiel, and C. Clerici* L70

Effect of dexamethasone on expression of adhesion molecules on $CD4^+$ lymphocytes
*J. M. Hughes, W. A. Sewell, J. L. Black, and C. L. Armour* L79

Overexpression of R domain eliminates cAMP-stimulated $Cl^-$ secretion in 9/HTEo$^-$ cells in culture
*A. Perez, K. A. Risma, E. A. Eckman, and P. B. Davis* L85

Maximal PDGF-induced lung fibroblast chemotaxis requires PDGF receptor-α
*A. R. Osornio-Vargas, P. M. Lindroos, P. G. Coin, A. Badgett, N. A. Hernandez-Rodriguez, and J. C. Bonner* L93

Activation of $K_{Ca}$ channels in airway smooth muscle cells by endogenous protein kinase A
*Z.-W. Wang and M. I. Kotlikoff* L100

Protein kinase C in intracellular pH regulation in alveolar type II cells
*S. Wadsworth, A.-M. Wu, A. Spitzer, and A. Chander* L106

Augmentation of cytokine-induced nitric oxide synthesis by hydrogen peroxide
*S. A. Milligan, M. W. Owens, and M. B. Grisham* L114

Role of calmodulin and myosin light-chain kinase in lung ischemia-reperfusion injury
*P. L. Khimenko, T. M. Moore, P. S. Wilson, and A. E. Taylor* L121

Prostaglandin G/H synthase-2 is the constitutive and dominant isoform in cultured human lung epithelial cells
*K. Asano, C. M. Lilly, and J. M. Drazen* L126

In vivo exposure to $NO_2$ reduces TNF and IL-6 production by endotoxin-stimulated alveolar macrophages
*A. Erroi, P. Pagani, M. Sironi, and M. Salmona* L132

Insulin-like growth factor-I and type I insulin-like growth factor receptor in 85% $O_2$-exposed rat lung
*R. N. N. Han, V. K. M. Han, S. Buch, B. A. Freeman, M. Post, and A. K. Tanswell* L139

Redox regulation of manganese superoxide dismutase
*B. B. Warner, L. Stuart, S. Gebb, and J. R. Wispé* L150

Bioelectric response of human nasal epithelial cells to polycationic protein
*M. R. Van Scott, M. D. Smith, C. A. Welch, C. Bentzel, and W. J. Metzger* L159

Transcriptional regulation of iNOS by IL-1β in cultured rat pulmonary artery smooth muscle cells
*H. R. Wong, J. D. Finder, K. Wasserloos, C. J. Lowenstein, D. A. Geller, T. R. Billiar, B. R. Pitt, and P. Davies* L166

Hypoxia impairs nitrovasodilator-induced pulmonary vasodilation: role of Na-K-ATPase activity
*J. Tamaoki, E. Tagaya, I. Yamawaki, and K. Konno* L172

## RAPID COMMUNICATION

Distribution of alveolar type II cells in neonatal and adult rat lung revealed by RT-PCR in situ
*E. A. Mensah, N. M. Kumar, L. Nielsen, and J. S. Lwebuga-Mukasa* L178

## No. 2. AUGUST 1996

Higher lung antioxidant enzyme activity persists after single dose of corticosteroids in preterm lambs
*F. J. Walther, R. David-Cu, E. I. Mehta, D. H. Polk, A. H. Jobe, and M. Ikegami* L187

Glibenclamide blockade of CFTR chloride channels
*B. D. Schultz, A. D. G. DeRoos, C. J. Venglarik, A. K. Singh, R. A. Frizzell, and R. J. Bridges* L192

Amiloride inhibits cytokine production in epithelium infected with respiratory syncytial virus
*J. G. Mastronarde, M. M. Monick, T. J. Gross, and G. W. Hunninghake* L201

Tenascin synthesis, deposition, and isoforms in monocrotaline-induced pulmonary hypertensive rat lungs
*D. L. Lipke, S. M. Aziz, J. A. Fagerland, M. Majesky, and S. S. Arcot* L208

Leukotriene $C_4$ inhibits ciliary activity in the presence of γ-glutamyl transpeptidase
*T. Ganbo, K.-I. Hisamatsu, and H. Inoue* L216

Inhaled NO prevents IL-1-induced neutrophil accumulation and associated acute edema in isolated rat lungs
*D. M. Guidot, B. M. Hybertson, R. P. Kitlowski, and J. E. Repine* L225

Localization and activity of recombinant human CuZn superoxide dismutase after intratracheal administration
*N. Sahgal, J. M. Davis, C. Robbins, S. Horowitz, E. G. Langenback, R. H. Perry, D. Colflesh, J. Tierney, and S. R. Simon* L230

Transforming growth factor-α increases alveolar liquid clearance in anesthetized ventilated rats
*H. G. Folkesson, J.-F. Pittet, G. Nitenberg, and M. A. Matthay* L236

Expression of a calmodulin inhibitor peptide in progenitor alveolar type II cells disrupts lung development
*J. Wang, B. Campos, M. A. Kaetzel, and J. R. Dedman* L245

Role of calcium channel blockade in relaxation of tracheal smooth muscle by extracellular $Mg^{2+}$
*L. A. Sonna, C. A. Hirshman, and T. L. Croxton* L251

Surfactant protein A is degraded by alveolar macrophages
*S. R. Bates and A. B. Fisher* L258

Role of intercellular adhesion molecule-1 in antigen-induced lung inflammation in Brown Norway rats
*I. M. Richards, K. P. Kolbasa, G. E. Winterrowd, C. A. Hatfield, S. L. Vonderfecht, S. F. Fidler, R. L. Griffin, J. R. Brashler, R. F. Krzesicki, C. L. Lane, D. C. Anderson, L. M. Sly, N. D. Staite, and J. E. Chin* L267

Integrin mediation of type II cell adherence to provisional matrix proteins
*H. J. Kim, D. H. Ingbar, and C. A. Henke* L277

A CRE-like element plays an essential role in cAMP regulation of human SP-A2 gene in alveolar type II cells
*P. P. Young and C. R. Mendelson* L287

Intracellular calcium stores in isolated tracheal smooth muscle cells
*S. M. Sims, Y. Jiao, and Z. G. Zheng* L300

Surfactant protein A protects growing cells and reduces TNF-α activity from LPS-stimulated macrophages
*J. C. McIntosh, S. Mervin-Blake, E. Conner, and J. R. Wright* L310

Effect of inspiratory training on mitochondrial DNA and cytochrome-*c* oxidase expression in the diaphragm
*Y. Akiyama, R. E. Garcia, and A. R. Bazzy* L320

Inhaled nitric oxide prevents pulmonary endothelial dysfunction after mesenteric ischemia-reperfusion
*D. A. Fullerton, J. H. Eisenach, R. C. McIntyre, Jr., R. S. Friese, B. C. Sheridan, G. B. Roe, J. Agrafojo, A. Banerjee, and A. H. Harken* L326

Localization of epithelial sodium channel subunit mRNAs in adult rat lung by in situ hybridization
*K. Matsushita, P. B. McCray, Jr., R. D. Sigmund, M. J. Welsh, and J. B. Stokes* L332

## No. 3. SEPTEMBER 1996

Specificity and uniqueness of endothelial cell stress responses
*M. Tucci, R. J. McDonald, R. Aaronson, K. K. Graven, and H. W. Farber* L341

Ion transport, ciliary activity, and mechanosensitivity of sinusal mucosa: an in vitro study
*D. Leuba, Y. De Ribaupierre, and P. Kucera* L349

TNF-α-induced inhibition of PC synthesis by human type II pneumocytes is sequentially mediated by $PGE_2$ and NO
*E. Vara, J. Arias-Díaz, C. García, J. Hernández, and J. L. Balibrea* L359

$ET_A$ and $ET_B$ receptors cooperate in DNA synthesis via opposing regulations of cAMP in human lung cell line
*M. Takimoto, K. Oda, T. Früh, M. Takai, T. Okada, and Y. Sasaki* L366

Differential changes in SP-A and disaturated phospholipids in the isolated perfused rat lung and in vivo
*I. R. Doyle, H. A. Barr, K. G. Davidson, and T. E. Nicholas* L374

Oxidant stress responses in influenza virus pneumonia: gene expression and transcription factor activation
*A. M. K. Choi, K. Knobil, S. L. Otterbein, D. A. Eastman, and D. B. Jacoby* L383

Evidence for a vitamin D paracrine system regulating maturation of developing rat lung epithelium
*T. M. Nguyen, H. Guillozo, L. Marin, C. Tordet, S. Koite, and M. Garabedian* L392

Role of protein tyrosine phosphorylation in $H_2O_2$-induced activation of endothelial cell phospholipase D
*V. Natarajan, S. Vepa, R. S. Verma, and W. M. Scribner* L400

Reduced in vivo plasma fibronectin content of lung matrix during postoperative sepsis
*R. A. Rebres, E. Cho, R. F. Rotundo, and T. M. Saba* L409

Altered vasoreactivity in lungs isolated from rats exposed to nitric oxide gas
*M. Oka, M. Ohnishi, H. Takahashi, S. Soma, K. Hasunuma, K. Sato, and S. Kira* L419

Role of C fibers in the inflammatory response to intratracheal lipopolysaccharide
*N. C. Long, C. W. Frevert, and S. A. Shore* L425

SP-A-binding protein BP55 is involved in surfactant endocytosis by type II pneumocytes
*H. Wissel, A. C. Looman, I. Fritzsche, B. Rüstow, and P. A. Stevens* L432

Hypoxia-reoxygenation impairs NO-mediated vasodilation in rat lungs
*S. Eddahibi, B. Raffestin, Y. Tayarani, C. Carville, and S. Adnot* L441

Effect of extracellular ATP on cytosolic $Ca^{2+}$ concentration in rat pulmonary artery myocytes
*C. Guibert, P. Pacaud, G. Loirand, R. Marthan, and J.-P. Savineau* L450

Protective effects of BQ-123, an $ET_A$ receptor antagonist, against leukotoxin-induced injury in rat lungs
*T. Ishizaki, K. Shigemori, S. Ameshima, T. Nakai, S. Miyabo, M. Hayakawa, T. Ozawa, and N. F. Voelkel* L459

Relationship between volume of bathing medium and ectoenzyme activity in monolayers of cultured BPAEC
*A. Papapetropoulos, L. A. Elmore, and J. D. Catravas* L464

Recombinant thrombomodulin prevents endotoxin-induced lung injury in rats by inhibiting leukocyte activation
*M. Uchiba, K. Okajima, K. Murakami, M. Johno, H. Okabe, and K. Takatsuki* L470

T cell activation in a murine model of asthma
*S. J. Krinzman, G. T. De Sanctis, M. Cernadas, L. Kobzik, J. A. Listman, D. C. Christiani, D. L. Perkins, and P. W. Finn* L476

## RAPID COMMUNICATIONS

Dexamethasone suppresses mucus production and MUC-2 and MUC-5AC gene expression by NCI-H292 cells
*H. Kai, K. Yoshitake, A. Hisatsune, T. Kido, Y. Isohama, K. Takahama, and T. Miyata* L484

A putative sub-10-kDa basement membrane activity required for lung alveolar formation in vitro
*M. L. Matter and G. W. Laurie* L489

## No. 4. OCTOBER 1996

Acidic fibroblast growth factor and keratinocyte growth factor stimulate fetal rat pulmonary epithelial growth
*R. R. Deterding, C. R. Jacoby, and J. M. Shannon* L495

Capsaicin-induced release of VIP-like immunoreactivity: modulation by enzyme inhibitors
*A. S. Leme, F. M. Arantes, E. A. L. Maldonado, M. do Patrocínio T. N. Warth, and M. A. Martins* L506

Effect of nitric oxide on heme metabolism in pulmonary artery endothelial cells
*E. L. Yee, B. R. Pitt, T. R. Billiar, and Y.-M. Kim* L512

Polymerization of fibrinogen in murine bleomycin-induced lung injury
*M. A. Olman, W. L. Simmons, D. J. Pollman, A. Y. Loftis, A. Bini, E. J. Miller, G. M. Fuller, and K. E. Rivera* L519

Ability of adenovirus vectors containing different CFTR transcriptional cassettes to correct ion transport defects in CF cells
*C. Jiang, S. P. O'Connor, D. Armentano, P. B. Berthelette, S. C. Schiavi, D. M. Jefferson, A. E. Smith, S. C. Wadsworth, and S. H. Cheng* L527

Endothelin-1 causes sequential trapping of platelets and neutrophils in pulmonary microcirculation in rats
*E. Helset, S. Lindal, R. Olsen, R. Myklebust, and L. Jørgensen* L538

Age-related enhancement of 5-lipoxygenase metabolic capacity in cattle alveolar macrophages
*M.-C. Lu, M. Peters-Golden, D. E. Hostetler, N. E. Robinson, and F. J. Derksen* L547

Sensitivity of lungs of aging Fischer 344 rats to ozone: assessment by bronchoalveolar lavage
*R. Vincent, D. Vu, G. Hatch, R. Poon, K. Dreher, J. Guénette, S. Bjarnason, M. Potvin, J. Norwood, and E. McMullen* L555

IL-10 enhances resolution of pulmonary inflammation in vivo by promoting apoptosis of neutrophils
*G. Cox* L566

Role of the palmitoylation of surfactant-associated protein C in surfactant film formation and stability
*R. Qanbar, S. Cheng, F. Possmayer, and S. Schürch* L572

Lung epithelial cell-released nitric oxide protects against PMN-mediated cell injury
*W.-Y. Su, B. J. Day, B.-H. Kang, J. D. Crapo, Y.-C. T. Huang, and L.-Y. Chang* L581

Polymorphonuclear leukocyte transit times in bone marrow during streptococcal pneumonia
*T. Terashima, B. Wiggs, D. English, J. C. Hogg, and S. F. Van Eeden* L587

Culture and characterization of human nasal gland cells
*M. Furukawa, M. Yamaya, K. Ikeda, T. Oshima, T. Suzuki, H. Sasaki, and T. Takasaka* L593

Effects of inflammation and acute β-agonist inhalation on $\beta_2$-AR signaling in human airways
*R. B. Penn, J. R. Shaver, J. G. Zangrilli, M. Pollice, J. E. Fish, S. P. Peters, and J. L. Benovic* L601

Developmental and hormonal regulation of SP-A gene expression in baboon fetal lung
*S. R. Seidner, M. E. Smith, and C. R. Mendelson* L609

Characterization of two baboon surfactant protein A genes
*E. Gao, Y. Wang, S. M. McCormick, J. Li, S. R. Seidner, and C. R. Mendelson* L617

Human and rat airway smooth muscle responsiveness after ozone exposure in vitro
*E. Roux, C. Guibert, H. Crevel, J.-P. Savineau, and R. Marthan* L631

Ion transport mechanisms in native rabbit nasal airway epithelium
*M. Röpke, S. Carstens, M. Holm, and O. Frederiksen* L637

Effects of a short-chain phospholipid on ion transport pathways in rabbit nasal airway epithelium
*M. Röpke, M. Hansen, S. Carstens, P. Christensen, G. Danielsen, and O. Frederiksen* L646

Clara cell secretory protein: a determinant of PCB bioaccumulation in mammals
*B. R. Stripp, J. Lund, G. W. Mango, K. C. Doyen, C. Johnston, K. Hultenby, M. Nord, and J. A. Whitsett* L656

Histamine activates phospholipase C in human airway epithelial cells via a phorbol ester-sensitive pathway
*M. Rugolo, F. Barzanti, D. C. Gruenert, and S. Hrelia* L665

Differences in basal and hyperoxia-associated HO expression in oxidant-resistant hamster fibroblasts
*P. A. Dennery, H. E. Wong, K. J. Sridhar, P. A. Rodgers, J. E. Sim, and D. R. Spitz* L672

## No. 5. NOVEMBER 1996

Human alveolar macrophages prevent apoptosis in polymorphonuclear leukocytes
*J. P. Herlihy, M. W. Vermeulen, and C. A. Hales* L681

Sulfation of extracellular matrices modifies responses of alveolar type II cells to fibroblast growth factors
*P. L. Sannes, J. Khosla, and P.-W. Cheng* L688

Effects of organotypic culture on parasympathetic innervation of guinea pig trachealis
*B. J. Canning, B. J. Undem, P. C. Karakousis, and R. D. Dey* L698

Association of ICAM-1 with the cytoskeleton in rat alveolar epithelial cells in primary culture
*W. W. Barton, S. E. Wilcoxen, P. J. Christensen, and R. Paine III* L707

Halothane reduces myofilament $Ca^{2+}$ sensitivity during muscarinic receptor stimulation of airway smooth muscle
*M. Akao, A. Hirasaki, K. A. Jones, G. Y. Wong, D. H. Bremerich, and D. O. Warner* L719

Fibronectin and its $\alpha_5\beta_1$-integrin receptor are involved in the wound-repair process of airway epithelium
*A.-L. Hérard, D. Pierrot, J. Hinnrasky, H. Kaplan, D. Sheppard, E. Puchelle, and J.-M. Zahm* L726

Tobacco smoke-induced lung emphysema in guinea pigs is associated with increased interstitial collagenase
*M. Selman, M. Montaño, C. Ramos, B. Vanda, C. Becerril, J. Delgado, R. Sansores, R. Barrios, and A. Pardo* L734

Protein movement across cultured guinea pig trachea: specificity and effect of transcytosis inhibitors
*M. E. Deffebach, C. J. Bryan, and C. M. Hoy* L744

Interactions of recombinant human pulmonary surfactant protein D and SP-D multimers with influenza A
*K. Hartshorn, D. Chang, K. Rust, M. White, J. Heuser, and E. Crouch* L753

Evidence for functional tachykinin $NK_1$ receptors on human isolated small bronchi
*E. Naline, M. Molimard, D. Regoli, X. Emonds-Alt, J.-F. Bellamy, and C. Advenier* L763

Hypoxia-induced pulmonary arterial contraction appears to be dependent on myosin light chain phosphorylation
*Y. Zhao, R. A. Rhoades, and C. S. Packer* L768

Modulation of $Cl^-$ secretion by benzimidazolones. I. Direct activation of a $Ca^{2+}$-dependent $K^+$ channel
*D. C. Devor, A. K. Singh, R. A. Frizzell, and R. J. Bridges* L775

Modulation of $Cl^-$ secretion by benzimidazolones. II. Coordinate regulation of apical $G_{Cl}$ and basolateral $G_K$
*D. C. Devor, A. K. Singh, R. J. Bridges, and R. A. Frizzell* L785

Classical second messengers are not involved in proteinase-induced degranulation of airway gland cells
*C. P. Sommerhoff, K. C. Fang, J. A. Nadel, and G. H. Caughey* L796

Fibronectin expression and organization in mesothelial and mesothelioma cells
*P. C. Ferriola and W. Stewart* L804

Asbestos induces apoptosis in human alveolar macrophages
*R. F. Hamilton, L. Li, R. Iyer, and A. Holian* L813

Neutrophil depletion attenuates endotoxin-induced dysfunction of cGMP-mediated pulmonary vasorelaxation
*B. C. Sheridan, R. C. McIntyre, J. Agrafojo, D. R. Meldrum, X. Meng, and D. A. Fullerton* L820

Gestational and tissue-specific regulation of ClC-2 chloride channel expression
*C. B. Murray, S. Chu, and P. L. Zeitlin* L829

Dimethyl sulfoxide decreases interleukin-8-mediated neutrophil recruitment in the airways
*P. P. Massion, A. Lindén, H. Inoue, M. Mathy, K. M. Grattan, and J. A. Nadel* L838

Soluble and insoluble fibronectin increases alveolar epithelial wound healing in vitro
*C. Garat, F. Kheradmand, K. H. Albertine, H. G. Folkesson, and M. A. Matthay* L844

Oxidant stress stimulates mucin secretion and PLC in airway epithelium via a nitric oxide-dependent mechanism
*D. T. Wright, B. M. Fischer, C. Li, L. G. Rochelle, N. J. Akley, and K. B. Adler* L854

Retinoic acid increases surfactant protein mRNA in fetal rat lung in culture
*C. W. Bogue, H. C. Jacobs, D. W. Dynia, C. M. Wilson, and I. Gross* L862

Regulation of intracellular xanthine oxidase by endothelial-derived nitric oxide
*C. G. Cote, F.-S. Yu, J. J. Zulueta, R. J. Vosatka, and P. M. Hassoun* L869

**No. 6. DECEMBER 1996**

Pertussis toxin alters the concentration and turnover of manganese superoxide dismutase in rat lung
*A. Berkovich, D. Massaro, and L. B. Clerch* L875

Basic fibroblast growth factor induces expression of the PDGF receptor-α on human bronchial smooth muscle cells
*J. C. Bonner, A. Badgett, P. M. Lindroos, and P. G. Coin* L880

Protective effect of substance P on permeability of airway epithelial cells in culture
*X.-Y. Yu, B. J. Undem, and E. W. Spannhake* L889

Increase of lung sodium-potassium-ATPase activity during recovery from high-permeability pulmonary edema
*D. Zuege, S. Suzuki, and Y. Berthiaume* L896

Response of airway smooth muscle cells to TGF-β1: effects on growth and synthesis of glycosaminoglycans
*P. N. Black, P. G. Young, and S. J. M. Skinner* L910

P-selectin-mediated attachment of small cell lung carcinoma to endothelial cells
*S. T. Pottratz, T. D. Hall, W. M. Scribner, H. N. Jayaram, and V. Natarajan* L918

Effects of U-37883A, a vascular selective $K^+_{ATP}$ channel antagonist, in the pulmonary and hindlimb circulation
*B. J. DeWitt, D. Y. Cheng, T. J. McMahon, J. R. Marrone, H. C. Champion, and P. J. Kadowitz* L924

IL-1β stimulates superoxide and delayed peroxynitrite production by pulmonary vascular smooth muscle cells
*A. Boota, H. Zar, Y.-M. Kim, B. Johnson, B. Pitt, and P. Davies* L932

Effect of okadaic acid on elastin gene expression in interstitial lung fibroblasts
*J. L. Berk, N. Massoomi, M. Krupsky, and R. H. Goldstein* L939

Early divergent lung antioxidant enzyme expression in response to lipopolysaccharide
*L. B. Clerch, A. Wright, D. J. Chung, and D. Massaro* L949

Effects of hypoxia on expression of superoxide dismutases in cultured ATII cells and lung fibroblasts
*R. M. Jackson, G. Parish, and Y.-S. Ho* L955

Mechanism of RSV-induced IL-8 gene expression in A549 cells before viral replication
*M. A. Fiedler, K. Wernke-Dollries, and J. M. Stark* L963

Expression of fibronectin mRNA splice variants by rabbit lung in vivo and by alveolar type II cells in vitro
*W. M. Maniscalco, R. H. Watkins, and M. H. Campbell* L972

Hyporesponsiveness to inhaled nitric oxide in isolated, perfused lungs from endotoxin-challenged rats
*A. Holzmann, K. D. Bloch, L. S. Sanchez, G. Filippov, and W. M. Zapol* L981

Keratinocyte growth factor stimulates CFTR-independent fluid secretion in the fetal lung in vitro
*L. Zhou, R. W. Graeff, P. B. McCray, Jr., W. S. Simonet, and J. A. Whitsett* L987

Hydroxylation of salicylate in lungs of Fischer 344 rats: effects of aging and ozone exposure
*L. Liu, P. Kumarathasan, J. Guénette, and R. Vincent* L995

Colchicine inhibits arachidonate release and 5-lipoxygenase action in alveolar macrophages
*M. Peters-Golden, R. W. McNish, J. A. Davis, R. A. Blackwood, and T. G. Brock* L1004

Leukotriene $D_4$ induces MMP-1, which functions as an IGFBP protease in human airway smooth muscle cells
*R. Rajah, S. E. Nunn, D. J. Herrick, M. M. Grunstein, and P. Cohen* L1014

## RAPID COMMUNICATION

Quantitation of mucin RNA by PCR reveals induction of both MUC2 and MUC5AC mRNA levels by retinoids
*K. Guzman, T. E. Gray, J.-H. Yoon, and P. Nettesheim* L1023

*Subject Index to Volume 15* L1029
*Author Index to Volume 15* L1039

American Journal of Physiology:
Heart and Circulatory Physiology

No. 1. JULY 1996

## CARDIAC PHYSIOLOGY

Comparative effects of contraction and angiotensin II on growth of adult feline cardiocytes in primary culture
*H. Wada, M. R. Zile, C. T. Ivester, G. Cooper IV, and P. J. McDermott* H29

SERCA2a and mitochondrial cytochrome oxidase expression are increased in hearts of exercise-trained old rats
*C. A. Tate, T. Helgason, M. F. Hyek, R. P. McBride, M. Chen, M. A. Richardson, and G. E. Taffet* H68

Economy of contraction of cardiomyocytes as influenced by different positive inotropic interventions **(Special Communication)**
*S. Pöpping, S. Mruck, Y. Fischer, D. Kulsch, I. Ionescu, H. Kammermeier, and H. Rose* H357

Muscarine-gated $K^+$ channel: subunit stoichiometry and structural domains essential for G protein stimulation **(Rapid Communication)**
*S. J. Tucker, M. Pessia, and J. P. Adelman* H379

Right ventricular contractile protein function in rats with left ventricular myocardial infarction
*P. P. de Tombe, T. Wannenburg, D. Fan, and W. C. Little* H73

Different responses of epicardium and endocardium to $K_{ATP}$ channel modulators during regional ischemia
*S. Miyoshi, T. Miyazaki, K. Moritani, and S. Ogawa* H140

Differential effects of EMD-53998 on calcium-pressure relationship in normal and ischemic guinea pig heart
*R. Ishisu, Y. Abe, K. Onishi, K. Sekioka, and T. Nakano* H311

Functional effects of EMD-57033 in isovolumically beating isolated rabbit hearts
*A. H. Tobias, B. K. Slinker, R. D. Kirkpatrick, and K. B. Campbell* H51

Volume-related activities of sodium ion transporters: multinuclear NMR studies of isolated rat hearts
*N. Askenasy and G. Navon* H94

Impaired $Ca^{2+}$ handling is an early manifestation of pressure-overload hypertrophy in rat hearts
*K. C. Chang, J. H. M. Schreur, M. W. Weiner, and S. A. Camacho* H228

Stability of high-energy phosphates in right ventricle: myocardial energetics during right coronary hypotension
*M. Itoya, R. T. Mallet, Z.-P. Gao, A. G. Williams, Jr., and H. F. Downey* H320

$K_{ATP}$ channels in rat heart: blockade of ischemic and acetylcholine-mediated preconditioning by glibenclamide
*Y.-Z. Qian, J. E. Levasseur, K.-I. Yoshida, and R. C. Kukreja* H23

Regional and functional factors determining induction and maintenance of atrial fibrillation in dogs
*J. Wang, L. Liu, J. Feng, and S. Nattel* H148

Mitochondrial dysfunction accompanies diastolic dysfunction in diabetic rat heart
*C. E. Flarsheim, I. L. Grupp, and M. A. Matlib* H192

Myocardial adenosine $A_1$ and $A_2$ receptor activities during juvenile and adult stages of development
*D. R. Sawmiller, R. A. Fenton, and J. G. Dobson, Jr.* H235

Quantitative beat-to-beat analysis of heart rate dynamics during exercise
*M. P. Tulppo, T. H. Mäkikallio, T. E. S. Takala, T. Seppänen, and H. V. Huikuri* H244

Bidirectional augmentation of heart rate regulation by autonomic nervous system in rabbits
*T. Kawada, Y. Ikeda, M. Sugimachi, T. Shishido, O. Kawaguchi, T. Yamazaki, J. Alexander, Jr., and K. Sunagawa* H288

Proarrhythmic and antiarrhythmic actions of ion channel blockers on arrhythmias in the heart: model study **(Modeling in Physiology)**
*T. R. Chay* H329

## VASCULAR PHYSIOLOGY

Protein kinase C inhibits delayed rectifier $K^+$ current in rabbit vascular smooth muscle cells
*E. A. Aiello, O. Clément-Chomienne, D. P. Sontag, M. P. Walsh, and W. C. Cole* H109

Formation of an $F_2$-isoprostane in vascular smooth muscle cells by elevated glucose and growth factors
*R. Natarajan, L. Lanting, N. Gonzales, and J. Nadler* H159

Effect of endothelin antagonism on blood pressure and vascular structure in renovascular hypertensive rats
*J.-S. Li, L. Knafo, A. Turgeon, R. Garcia, and E. L. Schiffrin* H88

Effect of subarachnoid hemorrhage on dilatation of rat basilar artery in vivo
*C. G. Sobey, D. D. Heistad, and F. M. Faraci* H126

Active renin and renin glycoform dynamics in the carotid artery
*S. A. Katz, J. A. Opsahl, L. M. Forbis, and W. Ayenew* H184

Tissue specific expression of vascular smooth muscle angiotensin II receptor subtypes during ovine pregnancy
*B. E. Cox, C. R. Rosenfeld, J. E. Kalinyak, R. R. Magness, and P. W. Shaul* H212

Decreased sensitivity to vasoconstrictors in aortic rings after acute exposure to nitric oxide
*N. L. Kanagy, J. R. Charpie, J. Dananberg, and R. C. Webb* H253

Myogenic responses of isolated rat skeletal muscle venules: modulation by norepinephrine and endothelium
*G. Dörnyei, E. Monos, G. Kaley, and A. Koller* H267

Vanadate causes synthesis of endothelium-derived NO via pertussis toxin-sensitive G protein in pigs
*R. Nakaike, H. Shimokawa, M. K. Owada, O. Tokunaga, H. Yasutake, T. Kishimoto, C. Imada, T. Shiraishi, K. Egashira, and A. Takeshita* H296

Effect of ACh and calmodulin inhibitor on $O_2$ transfer from exocrine pancreatic microvessels of rats
*A. Seiyama, H. Kosaka, and T. Shiga* H1

cGMP and cAMP in prostaglandin-induced pial artery dilation and increased CSF opioid concentration
*W. M. Armstead* H166

Lymph pump mechanics in the rabbit hind leg
*F. Ikomi and G. W. Schmid-Schönbein* H173

Encapsulation of VIP into liposomes restores vasorelaxation in hypertension in situ
*H. Suzuki, Y. Noda, X.-P. Gao, F. Séjourné, H. Alkan-Önyuksel, S. Paul, and I. Rubinstein* H282

Determination of $Po_2$ and its heterogeneity in single capillaries **(Special Communication)**
*L. Zheng, A. S. Golub, and R. N. Pittman* H365

Effect of hypoxia on nitric oxide production in neonatal pig lung
*L. D. Nelin, C. J. Thomas, and C. A. Dawson* H8

Perfusion-$M\dot{V}o_2$ mismatch during inotropic stress in CAD patients with normal contractile function
*M. F. Janier, X. André-Fouet, P. Landais, M. C. Grégoire, F. Lavenne, J. Amaya, C. Mercier, J. Machecourt, and L. Cinotti* H59

Nitric oxide regulates endothelium-dependent vasodilator responses in rabbit hindquarters vascular bed in vivo
*G. A. Cohen, A. J. Hobbs, R. M. Fitch, M. J. Zinner, G. Chaudhuri, and L. J. Ignarro* H133

Effects of oxygen on regional hemodynamics in hemorrhagic shock
*H. Bitterman, V. Brod, G. Weisz, D. Kushnir, and N. Bitterman* H203

Pulmonary vascular response to angiotensin II in canine pacing-induced heart failure
*B. J. Roy, V. H. Pitts, and M. I. Townsley* H222

## INTEGRATIVE CARDIOVASCULAR PHYSIOLOGY


Regulation of ANG II receptor in hypertension: role of ANG II
*D. H. Wang, A. Yao, H. Zhao, and D. J. DiPette* H120

Sympathetic nerve activities in pulsatile and nonpulsatile systemic circulation in anesthetized goats
*K. Toda, E. Tatsumi, Y. Taenaka, T. Masuzawa, and H. Takano* H15

Muscle reflex stimulates sympathetic postganglionic efferents innervating triceps surae muscles of cats
*J. M. Hill, C. M. Adreani, and M. P. Kaufman* H38

Parasympathetic inhibition of sympathetic effects on sinus rate in anesthetized dogs
*Y. Furukawa, Y. Hoyano, and S. Chiba* H44

Stimulation of 5-$HT_3$ receptors in the NTS inhibits the cardiac Bezold-Jarisch reflex response
*C. Sévoz, A. Nosjean, J.-C. Callera, B. Machado, M. Hamon, and R. Laguzzi* H80

Hypoxia does not directly stimulate ischemically sensitive abdominal visceral afferents during ischemia
*L.-W. Fu, H.-L. Pan, K. F. Pitsillides, and J. C. Longhurst* H261

Infusions of pressor agents selectively attenuate depressor responses to ACh in anesthetized dogs
*T. Nakahara, K. Ishii, Y. Tanaka, and K. Nakayama* H273

Blockade of brain "ouabain" prevents sympathoexcitatory and pressor responses to high sodium in SHR
*B. S. Huang and F. H. H. Leenen* H103

Diurnal heart rate variability in healthy subjects: effects of aging and sex difference
*Y. Yamasaki, M. Kodama, M. Matsuhisa, M. Kishimoto, H. Ozaki, A. Tani, N. Ueda, Y. Ishida, and T. Kamada* H303

Hypertension, cardiac hypertrophy, and neurohumoral activity in a new animal model of obesity **(Special Communication)**
*J. F. Carroll, T. M. Dwyer, A. W. Grady, G. A. Reinhart, J.-P. Montani, K. Cockrell, E. F. Meydrech, and H. L. Mizelle* H373


## No. 2. AUGUST 1996

## CARDIAC PHYSIOLOGY


Increased carnitine palmitoyltransferase in cardiac myocytes is mediated by insulin growth factor I
*E. K. Hudson, D. Wang, L. L. Bieber, L. M. Buja, and J. B. McMillin* H422

Protection of reoxygenated cardiomyocytes against osmotic fragility by nitric oxide donors
*K. D. Schlüter, G. Jakob, M. Ruiz-Meana, D. Garcia-Dorado, and H. M. Piper* H428

Openings of cardiac $K_{ATP}$ channel by oxygen free radicals produced by xanthine oxidase reaction
*K. Tokube, T. Kiyosue, and M. Arita* H478

Electrophysiological characteristics of cloned skeletal and cardiac muscle sodium channels
*M. Chahine, I. Deschene, L. Q. Chen, and R. G. Kallen* H498

Regulation of sodium current development in cultured atrial tumor myocytes (AT-1 cells)
*T. Yang and D. M. Roden* H541

Survival of metabolically inhibited ventricular myocytes is enhanced by inhibition of rigor and SR $Ca^{2+}$ cycling
*T. Koyama, D. Boston, H. Ikenouchi, and W. H. Barry* H643

Phosphatidic acid increases intracellular free $Ca^{2+}$ and cardiac contractile force
*Y.-J. Xu, V. Panagia, Q. Shao, X. Wang, and N. S. Dhalla* H651

Fast sodium influx provides an initial step to trigger contractions in cat ventricle
*A.-M. Vites and J. A. Wasserstrom* H674

β-Adrenergic modulation of Na-K pump activity in young and adult canine cardiac Purkinje fibers
*F. Charpentier, M. J. Legato, S. F. Steinberg, I. S. Cohen, and M. R. Rosen* H706

Blockade of lysophosphatidylcholine-modified cardiac Na channels by a lidocaine derivative QX-222
*A. I. Undrovinas and J. C. Makielski* H790

Dissociation of negative inotropic effect of carbachol from changes in cAMP and PKA in perfused rat hearts
*J. Z. Zhang and K. M. MacLeod* H404

$I_{to}$ and action potential notch are smaller in left vs. right canine ventricular epicardium
*J. M. Di Diego, Z.-Q. Sun, and C. Antzelevitch* H548

Heat stress protects the perfused rabbit heart from complement-mediated injury
*M. R. Gralinski, S. C. Black, L. F. Stancato, K. S. Kilgore, P. A. Campau, J. L. Park, M. J. Ozeck, W. B. Pratt, and B. R. Lucchesi* H571

Cardiac electrophysiological variables in blood-perfused and buffer-perfused, isolated, working rabbit heart
*A. M. Gillis, E. Kulisz, and H. J. Mathison* H784

Recovery of glycolysis and oxidative metabolism during postischemic reperfusion of hypertrophied rat hearts
*B. O. Schönekess, M. F. Allard, and G. D. Lopaschuk* H798

Heart rate variability during artificial ventilation and apnea in brain-damaged rabbits
*M. Kawamoto, K. Kaneko, Hardian, and O. Yuge* H410

Parasympathetic denervation supersensitivity of the transplanted human ventricle in vivo
*J. Koglin, P. Überfuhr, and W. von Scheidt* H435

Response to cardiac sympathetic activation in transgenic mice overexpressing $\beta_2$-adrenergic receptor
*X.-J. Du, E. Vincan, D. M. Woodcock, C. A. Milano, A. M. Dart, and E. A. Woodcock* H630

Hydroxyl radical production during myocardial ischemia and reperfusion in cats
*C. A. O'Neill, L.-W. Fu, B. Halliwell, and J. C. Longhurst* H660

## VASCULAR PHYSIOLOGY

Elemental composition of Na pump inhibited rabbit aorta VSM cells by electron probe X-ray microanalysis
*H. Krep, A. LeFurgey, S. W. Graves, D. Hockett, P. Ingram, and N. K. Hollenberg* H514

Effect of heparin on fibrinolytic activity and platelet function in vivo
*G. R. Upchurch, C. R. Valeri, S. F. Khuri, M. J. Rohrer, G. N. Welch, H. MacGregor, G. Ragno, S. Francis, L. J. Rodino, A. D. Michelson, and J. Loscalzo* H528

Angiotensin II type 1 receptor-mediated activation of Ras in cultured rat vascular smooth muscle cells
*M. Okuda, Y. Kawahara, and M. Yokoyama* H595

Inward rectifier $K^+$ currents in smooth muscle cells from rat coronary arteries: block by $Mg^{2+}$, $Ca^{2+}$, and $Ba^{2+}$
*B. E. Robertson, A. D. Bonev, and M. T. Nelson* H696

Metalloprotease-mediated cleavage secretion of pulmonary ACE by vascular endothelial and kidney epithelial cells
*R. Ramchandran, S. Kasturi, J. G. Douglas, and I. Sen* H744

Calcium- and phorbol ester-dependent calponin phosphorylation in homogenates of swine carotid artery
*A. Rokolya, M. P. Walsh, and R. S. Moreland* H776

Angiotensin II formation in dog heart is mediated by different pathways in vivo and in vitro
*E. Balcells, Q. C. Meng, G. R. Hageman, R. W. Palmer, J. N. Durand, and L. J. Dell'Italia* H417

Peripheral artery structure and endothelial function in heart failure: effect of ACE inhibition
*P. Mulder, L. Elfertak, V. Richard, P. Compagnon, B. Devaux, J.-P. Henry, E. Scalbert, P. Desché, B. Macé, and C. Thuillez* H469

Modulation of endothelium-derived nitric oxide in canine femoral veins
*V. M. Miller and D. A. Barber* H668

Exogenous tetrahydrobiopterin causes endothelium-dependent contractions in isolated canine basilar artery
*H. Kinoshita and Z. S. Katusic* H738

Hyperkalemia alters EDHF-mediated hyperpolarization and relaxation in coronary arteries
*G.-W. He, C.-Q. Yang, W. F. Graier, and J.-A. Yang* H760

Shear-dependent release of venular nitric oxide: effect on arteriolar tone in rat striated muscle
*M. A. Boegehold* H387

In vivo and in vitro vasoactive reactions of coronary arteriolar microvessels to nitroglycerin
*C. J. H. Jones, L. Kuo, M. J. Davis, and W. M. Chilian* H461

Relationship between vasopressin and opioids in hypoxia induced pial artery vasodilation
*M. I. Rossberg and W. M. Armstead* H521

Age dependence of cerebrovascular response mechanisms in domestic pigs
*S. L. Zuckerman, W. M. Armstead, P. Hsu, M. Shibata, and C. W. Leffler* H535

Hydrogen peroxide induces leukocyte rolling: modulation by endogenous antioxidant mechanisms including NO
*B. Johnston, S. Kanwar, and P. Kubes* H614

Vitamin E ameliorates adverse effects of endothelial injury in brain arterioles
*W. I. Rosenblum, G. H. Nelson, R. A. Bei, R. B. Brandt, and W. Chan* H637

Cellular response to reperfused oxygen in the postischemic myocardium
*Y. Chung and T. Jue* H687

Theoretical predictions of end-capillary $P_{O_2}$ in muscles of athletic and nonathletic animals at $\dot{V}_{O_{2max}}$
*T. K. Roy and A. S. Popel* H721

Chronic $\alpha_1$-adrenergic blockade stimulates terminal and arcade arteriolar development
*R. J. Price and T. C. Skalak* H752

Effect of length and contraction on coronary perfusion in isolated perfused papillary muscle of rat heart
*C. P. Allaart and N. Westerhof* H447

Vasomotor responses of newly developed coronary collateral vessels
*J. W. Kinn, J. D. Altman, M. W. Chang, and R. J. Bache* H490

C-reactive protein inhibits increased pulmonary vascular permeability induced by fMLP in isolated rabbit lungs
*V. J. Abernathy, R. O. Webster, and T. E. Dahms* H507

Altered endothelium-dependent responses in lambs with pulmonary hypertension and increased pulmonary blood flow
*V. M. Reddy, J. Wong, J. R. Liddicoat, M. Johengen, R. Chang, and J. R. Fineman* H562

Reduction of cytochrome-c oxidase copper precedes failing cerebral $O_2$ utilization in fluorocarbon-perfused cats
*R. Stingele, B. Wagner, M. V. Kameneva, M. A. Williams, D. A. Wilson, N. V. Thakor, R. J. Traystman, and D. F. Hanley* H579

Nitric oxide synthase inhibition by L-NAME during repetitive focal cerebral ischemia in rabbits
*R. E. Anderson and F. B. Meyer* H588

RSR-13, an allosteric effector of hemoglobin, increases systemic and iliac vascular resistance in rats
*M. P. Kunert, J. F. Liard, and D. J. Abraham* H602

Adrenomedullin activity in chronically hypoxic rat lungs
*L. Zhao, L. A. Brown, A. A. Owji, D. J. R. Nunez, D. M. Smith, M. A. Ghatei, S. R. Bloom, and M. R. Wilkins* H622

Enhanced microvascular relaxations to VEGF and bFGF in chronically ischemic porcine myocardium
*F. W. Sellke, S. Y. Wang, A. Stamler, J. J. Lopez, J. Li, J. Li, and M. Simons* H713

## INTEGRATIVE CARDIOVASCULAR PHYSIOLOGY


Regulation of ANG II-receptor subtype and its gene expression in adrenal gland
*Y. Du, D.-F. Guo, T. Inagami, R. C. Speth, and D. H. Wang* H440

Nonlinear analysis of BP signal. Can it detect malfunctions in BP control?
*Y. Almog, S. Eliash, O. Oz, and S. Akselrod* H396

Aging is not accompanied by sympathetic hyperresponsiveness to air-jet stress
*H. M. Stauss, D. A. Morgan, K. E. Anderson, M. P. Massett, and K. C. Kregel* H768

Elevated heart rate variability in physically active postmenopausal women: a cardioprotective effect?
*K. P. Davy, N. L. Miniclier, J. A. Taylor, E. T. Stevenson, and D. R. Seals* H455

Role of ANG II in hypertension produced by chronic inhibition of nitric oxide synthase in conscious rats
*M. G. Melaragno and G. D. Fink* H806

Analysis of heart rate-based control of arterial blood pressure **(Modeling in Physiology)**
*W. C. Rose and J. S. Schwaber* H812


## No. 3. SEPTEMBER 1996

## CARDIAC PHYSIOLOGY


Free radicals enhance $Na^+/Ca^{2+}$ exchange in ventricular myocytes
*J. I. Goldhaber* H823

Actomyosin interaction modulates resting length of unstimulated cardiac ventricular cells
*S. J. Sollott, B. D. Ziman, D. M. Warshaw, H. A. Spurgeon, and E. G. Lakatta* H896

Phenylephrine suppresses outward $K^+$ currents in rat atrial myocytes
*D. R. Van Wagoner, M. Kirian, and M. Lamorgese* H937

Phorbol 12-myristate 13-acetate alters SR $Ca^{2+}$-ATPase gene expression in cultured neonatal rat heart cells
*M. Qi, J. W. M. Bassani, D. M. Bers, and A. M. Samarel* H1031

Contribution of $Na^+/Ca^{2+}$ exchange to action potential of human atrial myocytes
*A. Bénardeau, S. N. Hatem, C. Rücker-Martin, B. Le Grand, L. Macé, P. Dervanian, J.-J. Mercadier, and E. Coraboeuf* H1151

Age-related differences in β-adrenergic regulation of repolarization in canine epicardial myocytes
*F. Charpentier, Q.-Y. Liu, M. R. Rosen, and R. B. Robinson* H1174

Method for isolation of adult mouse cardiac myocytes for studies of contraction and microfluorimetry **(Special Communication)**
*B. M. Wolska and R. J. Solaro* H1250

Enhanced SR function in saponin-treated ventricular trabeculae from rabbits with heart failure
*M. A. Denvir, N. G. MacFarlane, D. J. Miller, and S. M. Cobbe* H850

Expression and localization of renin and angiotensinogen in rat heart after myocardial infarction
*R. C. J. J. Passier, J. F. M. Smits, M. J. A. Verluyten, and M. J. A. P. Daemen* H1040

Necrotic and apoptotic myocyte cell death in the aging heart of Fischer 344 rats
*J. Kajstura, W. Cheng, R. Sarangarajan, P. Li, B. Li, J. A. Nitahara, S. Chapnick, K. Reiss, G. Olivetti, and P. Anversa* H1215

Effect of preconditioning on ryanodine-sensitive $Ca^{2+}$ release from sarcoplasmic reticulum of rat heart
*M. Tani, Y. Asakura, H. Hasegawa, K. Shinmura, Y. Ebihara, and Y. Nakamura* H876

Nitrite oxidation of myoglobin in perfused myocardium: implications for energy coupling in respiration
*Y. Chung, D. Xu, and T. Jue* H1166

Reflex vagal control of atrial repolarization
*D. E. Euler, B. Olshansky, and S. Y. Kim* H870

The need to account for residual strains and composite nature of heart wall in mechanical analyses
*T. Kang and F. C. P. Yin* H947

Perfusion-induced changes in cardiac $O_2$ consumption and contractility are based on different mechanisms
*M. A. Dijkman, J. W. Heslinga, P. Sipkema, and N. Westerhof* H984

Cardioprotection with ischemic preconditioning and MLA: role of adenosine-regulating enzymes?
*K. Przyklenk, L. Zhao, R. A. Kloner, and G. T. Elliott* H1004

Electrophysiological background of individual variability in electrical defibrillation efficacy
*Y. Murakawa, T. Yamashita, K. Ajiki, K. Sezaki, Y. Kanese, and M. Omata* H1094

Biomechanics of the deconditioned left ventricle
*M. A. Fogel, K. Gupta, B. C. Baxter, P. M. Weinberg, J. Haselgrove, and E. A. Hoffman* H1193

Preconditioning is not abolished by the delayed rectifier $K^+$ blocker dofetilide
*G. J. Grover, A. J. D'Alonzo, S. Dzwonczyk, C. S. Parham, and R. B. Darbenzio* H1207

Comparison of two techniques for measuring two-dimensional strain in rat left ventricles **(Special Communication)**
*J. H. Omens, D. D. Farr, A. D. McCulloch, and L. K. Waldman* H1256

## VASCULAR PHYSIOLOGY

Regulation of endothelial NO synthase expression by cyclosporin A in bovine aortic endothelial cells
*S. López-Ongil, M. Saura, D. Rodríguez-Puyol, M. Rodríguez-Puyol, and S. Lamas* H1072

Preconditioning prevents chronic reperfusion-induced coronary endothelial dysfunction in rats
*N. Kaeffer, V. Richard, A. François, F. Lallemand, J.-P. Henry, and C. Thuillez* H842

Captopril prevents vascular and fibrotic changes but not cardiac hypertrophy in aortic-banded rats
*C. P. Regan, P. G. Anderson, S. P. Bishop, and K. H. Berecek* H906

Vasodilatory properties of recombinant maxadilan
*T. S. Jackson, E. Lerner, R. M. Weisbrod, M. Tajima, J. Loscalzo, and J. F. Keaney, Jr.* H924

Nitroglycerin relaxes rat tail artery primarily by lowering $Ca^{2+}$ sensitivity and partially by repolarization
*X.-L. Chen and C. M. Rembold* H962

Interaction between sympathetic and sensory nerves in rat small arteries: involvement of nitric oxide
*A. Ahluwalia and P. Vallance* H969

Chronic exercise decreases adrenergic agonist-induced vasoconstriction in spontaneously hypertensive rats
*H.-I. Chen and I.-P. Chiang* H977

Increased activity of vascular ACE related to atherosclerotic lesions in hyperlipidemic rabbits
*H. Mitani, T. Bandoh, M. Kimura, T. Totsuka, and S. Hayashi* H1065

Basal and adenosine-mediated protein flux from isolated coronary arterioles
*V. H. Huxley and D. A. Williams* H1099

Local and conducted vasomotor responses in isolated rat cerebral arterioles
*H. H. Dietrich, Y. Kajita, and R. G. Dacey, Jr.* H1109

Effects of 17β-estradiol on coronary microvascular responses to endothelin-1
*K. G. Lamping and D. W. Nuno* H1117

Nitric oxide modulates arteriolar responses to increased sympathetic nerve activity
*G. P. Nase and M. A. Boegehold* H860

Early collateral and microvascular adaptations to intestinal artery occlusion in rat
*J. L. Unthank, J. C. Nixon, H. M. Burkhart, S. W. Fath, and M. C. Dalsing* H914

Estimated functional diameter of alveolar septal microvessels in zone 1
*R. L. Conhaim and L. A. Rodenkirch* H996

Acidic and basic FGFs dilate arterioles of skeletal muscle through a NO-dependent mechanism
*H. M. Wu, Y. Yuan, M. McCarthy, and H. J. Granger* H1087

ACh dilates pial arterioles in endothelial and neuronal NOS knockout mice by NO-dependent mechanisms
*W. Meng, J. Ma, C. Ayata, H. Hara, P. L. Huang, M. C. Fishman, and M. A. Moskowitz* H1145

Oxygen consumption in the avascular guinea pig retina
*S. Cringle, D.-Y. Yu, V. Alder, E.-N. Su, and P. Yu* H1162

Differences between cytokine effects in the microcirculation of the rat
*N. Baudry, C. Rasetti, and E. Vicaut* H1186

Modeling and simulation of illumination effects for evaluation of microvessels of the conjunctiva **(Modeling in Physiology)**
*C. E. Wick, M. H. Loew, and J. Kurantsin-Mills* H1229

Mechanisms of cerebral vasodilation by superoxide, hydrogen peroxide, and peroxynitrite **(Rapid Communication)**
*E. P. Wei, H. A. Kontos, and J. S. Beckman* H1262

Acute transient coronary sinus hypertension impairs left ventricular function and induces myocardial edema
*J. W. Pratt, E. R. Schertel, S. L. Schaefer, K. E. Esham, D. E. McClure, C. F. Heck, and P. D. Myerowitz* H834

NO synthase inhibition modulates NMDA-induced changes in cerebral blood flow and EEG activity
*D. A. Pelligrino, R. L. Gay III, V. L. Baughman, and Q. Wang* H990

Limitation of cardiac output by a coronary $\alpha_1$-constrictor tone during exercise in dogs
*S.-J. Kim, G. Kline, and P. A. Gwirtz* H1125

Endothelium-derived nitric oxide mediates hypoxic vasodilation of resistance vessels in humans
*M. L. Blitzer, S. D. Lee, and M. A. Creager* H1182

## INTEGRATIVE CARDIOVASCULAR PHYSIOLOGY

Influence of GABAergic mechanisms on baroreceptor inputs to nucleus tractus solitarii of rats
*P. Ruggeri, C. E. Cogo, V. Picchio, C. Molinari, R. Ermirio, and F. R. Calaresu* H931

Neural arc of baroreflex optimizes dynamic pressure regulation in achieving both stability and quickness
*Y. Ikeda, T. Kawada, M. Sugimachi, O. Kawaguchi, T. Shishido, T. Sato, H. Miyano, W. Matsuura, J. Alexander, Jr., and K. Sunagawa* H882

Cardiorespiratory and tissue oxygen dose response to rat endotoxemia
*D. M. Rosser, R. P. Stidwill, D. Jacobson, and M. Singer* H891

Brain angiotensin II tonically modulates sympathetic baroreflex in rabbit ventrolateral medulla
*T. Saigusa, M. Iriki, and J. Arita* H1015

Invariance of the resistance to venous return to carotid sinus baroreflex control
*T. Hatanaka, J. T. Potts, and A. A. Shoukas* H1022

Reflex vascular responses to abdominal venous distension in the anesthetized dog
*C. P. A. Doe, M. J. Drinkhill, D. S. Myers, D. A. Self, and R. Hainsworth* H1049

Role of parabrachial nucleus in baroreflex-mediated coronary vasoconstriction
*D. D. Gutterman and A. Goodson* H1079

Central $V_1$ AVP receptors are involved in cardiovascular adaptation to hypovolemia in WKY but not in SHR
*A. S. Budzikowski, P. Paczwa, and E. Szczepańska-Sadowska* H1057

Heme oxygenase substrates acutely lower blood pressure in hypertensive rats
*R. A. Johnson, M. Lavesa, K. DeSeyn, M. J. Scholer, and A. Nasjletti* H1132

Relation between baroreflex sensitivity and carotid artery elasticity in healthy humans
*I. Bonyhay, G. Jokkel, and M. Kollai* H1139

Valsalva's maneuver revisited: a quantitative method yielding insights into human autonomic control **(Special Communication)**
*M. L. Smith, L. A. Beightol, J. M. Fritsch-Yelle, K. A. Ellenbogen, T. R. Porter, and D. L. Eckberg* H1240

No. 4. OCTOBER 1996

## CARDIAC PHYSIOLOGY

$\alpha_1$-Adrenergic stimulation induces cardiac tolerance to hypoxia via induction and activation of Mn-SOD
*N. Yamashita, M. Nishida, S. Hoshida, J. Igarashi, M. Hori, T. Kuzuya, and M. Tada* H1356

Effects of TNF-$\alpha$ on $[Ca^{2+}]_i$ and contractility in isolated adult rabbit ventricular myocytes
*J. I. Goldhaber, K. H. Kim, P. D. Natterson, T. Lawrence, P. Yang, and J. N. Weiss* H1449

Differential regulation of voltage-activated potassium currents in cultured human atrial myocytes
*S. N. Hatem, A. Bénardeau, C. Rücker-Martin, J.-L. Samuel, E. Coraboeuf, and J.-J. Mercadier* H1609

A model of the action potential and underlying membrane currents in a rabbit atrial cell **(Special Communication)**
*D. S. Lindblad, C. R. Murphey, J. W. Clark, and W. R. Giles* H1666

Inotropic agent EMD-53998 weakens nucleotide and phosphate binding to cross bridges in porcine myocardium
*Y. Zhao and M. Kawai* H1394

$\alpha_1$-Adrenoceptor subtypes mediating inotropic and electrophysiological effects in mammalian myocardium
*M. Nagashima, Y. Hattori, Y. Akaishi, N. Tohse, I. Sakuma, A. Kitabatake, and M. Kanno* H1423

Discontinuous conduction at Purkinje-ventricular muscle junction
*R. T. Wiedmann, R. C. Tan, and R. W. Joyner* H1507

Viscoelastic behavior of the isolated guinea pig left ventricle in diastole
*V. Starc, E. L. Yellin, and S. D. Nikolic* H1314

Dietary fish oil prevents reperfusion $Ins(1,4,5)P_3$ release in rat heart: possible antiarrhythmic mechanism
*K. E. Anderson, X.-J. Du, A. J. Sinclair, E. A. Woodcock, and A. M. Dart* H1483

Instantaneous diastolic transmitral pressure differences from color Doppler M mode echocardiography
*N. L. Greenberg, P. M. Vandervoort, and J. D. Thomas* H1267

Coronary hyperperfusion augments myocardial oxygen consumption
*Y. Ishibashi, J. Zhang, D. J. Duncker, C. Klassen, T. Pavek, and R. J. Bache* H1384

Recurrent appearance of protective zones after an unsuccessful defibrillation shock
*C. Hwang, W. Fan, and P.-S. Chen* H1491

Regulation of sympathetic presynaptic components in rat left ventricle during ligation of abdominal aorta
*C. Nyquist-Battie, P. K. Cochran, V. R. Evans, J. M. Hitchcock, and C. Unal* H1547

Increased ventricular contractility is not sufficient for effective positive inotropic intervention
*P. F. Binkley, D. B. Van Fossen, G. J. Haas, and C. V. Leier* H1635

## VASCULAR PHYSIOLOGY

Expression of phagocyte NADPH oxidase components in human endothelial cells
*S. A. Jones, V. B. O'Donnell, J. D. Wood, J. P. Broughton, E. J. Hughes, and O. T. G. Jones* H1626

Communication between tyrosine kinase pathway and myosin light chain kinase pathway in smooth muscle
*N. Jin, R. A. Siddiqui, D. English, and R. A. Rhoades* H1348

Adenosine $A_2$-receptor activation inhibits neutrophil-mediated injury to coronary endothelium
*Z.-Q. Zhao, H. Sato, M. W. Williams, A. Z. Fernandez, and J. Vinten-Johansen* H1456

Elevated pressure stimulates protooncogene expression in isolated mesenteric arteries
*S. P. Allen, H. M. Liang, M. A. Hill, and R. L. Prewitt* H1517

Lysophosphatidylcholine stimulates phospholipase D in human coronary endothelial cells: role of PKC **(Rapid Communication)**
*D. A. Cox and M. L. Cohen* H1706

Change in intramural strain distribution in rat aorta due to smooth muscle contraction and relaxation **(Rapid Communication)**
*T. Matsumoto, M. Tsuchida, and M. Sato* H1711

Temporal and spatial relationship between no-reflow phenomenon and postischemic necrosis in skeletal muscle
*M. J. Hickey, J. V. Hurley, and W. A. Morrison* H1277

Extreme vasoreactivity of rat epineurial arterioles to vasopressin
*H. Sasaki and P. A. Low* H1307

Arginine analogues inhibit responses mediated by ATP-sensitive $K^+$ channels
*H. A. Kontos and E. P. Wei* H1498

Inhibition of brain *P*-450 arachidonic acid epoxygenase decreases baseline cerebral blood flow
*N. J. Alkayed, E. K. Birks, A. G. Hudetz, R. J. Roman, L. Henderson, and D. R. Harder* H1541

Repeated cocaine administration reduces bradykinin-induced dilation of pial arterioles
*J. R. Copeland, K. A. Willoughby, R. J. Police, and E. F. Ellis* H1576

Oxygen modulates $\alpha_{1B}$-adrenergic receptor gene expression by arterial but not venous vascular smooth muscle
*A. D. Eckhart, Z. Zhu, W. J. Arendshorst, and J. E. Faber* H1599

Tissue oxygenation and perfusion in endotoxemia
*M. Sair, P. J. Etherington, N. P. Curzen, C. P. Winlove, and T. W. Evans* H1620

Modeling regional myocardial flows from residue functions of an intravascular indicator **(Modeling in Physiology)**
*K. Kroll, N. Wilke, M. Jerosch-Herold, Y. Wang, Y. Zhang, R. J. Bache, and J. B. Bassingthwaighte* H1643

Protein kinase C modulates microvascular permeability through nitric oxide synthase **(Rapid Communication)**
*M. M. Ramírez, D. D. Kim, and W. N. Durán* H1702

L-NNA-sensitive regional cerebral blood flow augmentation during hypercapnia in type III NOS mutant mice **(Rapid Communication)**
*J. Ma, W. Meng, C. Ayata, P. L. Huang, M. C. Fishman, and M. A. Moskowitz* H1717

Direct detection and quantification of singlet oxygen during ischemia and reperfusion in rat hearts **(Letter to the Editor)**
*M. Ashraf and X. Zhai* H1720

Matching dicrotic notch and mean pulmonary artery pressures: implications for effective arterial elastance
*D. Chemla, J.-L. Hébert, C. Coirault, S. Salmeron, K. Zamani, and Y. Lecarpentier* H1287

L-Arginine augments nitric oxide production and mesenteric blood flow in ovine endotoxemia
*K. G. Allman, A. P. Stoddart, M. M. Kennedy, and J. D. Young* H1296

Effect of $\alpha_1$-adrenoceptor blockade on resting and hyperemic myocardial blood flow in normal humans
*R. Lorenzoni, S. D. Rosen, and P. G. Camici* H1302

Acute stress increases venomotor tone in conscious rats
*D. S. Martin, C. Appelt, M. C. Rodrigo, and M. C. Egland* H1375

Effects of cardiac contraction and coronary sinus pressure elevation on collateral circulation
*M. Sato, T. Saito, M. Mitsugi, S.-I. Saitoh, T. Niitsuma, K. Maehara, and Y. Maruyama* H1433

Neurally mediated cardiac effects of forskolin in conscious dogs
*M. Iwase, Y. Ishikawa, Y.-T. Shen, R. P. Shannon, N. Sato, P. K. Ganguly, T. Eki, D. E. Vatner, and S. F. Vatner* H1473

Direct in vivo effects of nitric oxide on the coronary circulation
*J. W. Chambers, G. S. Voss, J. R. Snider, S. M. Meyer, J. L. Cartland, and R. F. Wilson* H1584

Activation of ATP-sensitive potassium channels contributes to reactive hyperemia in humans
*P. F. Banitt, P. Smits, S. B. Williams, P. Ganz, and M. A. Creager* H1594

Measurement of regional myocardial blood flow in rats by unlabeled microspheres and Coulter Channelyzer **(Special Communication)**
*X. Wang, F. Li, S. Said, J. M. Capasso, and A. M. Gerdes* H1656

Vasodilation and muscle pump contribution to immediate exercise hyperemia **(Rapid Communication)**
*M. E. Tschakovsky, J. K. Shoemaker, and R. L. Hughson* H1697

## INTEGRATIVE CARDIOVASCULAR PHYSIOLOGY

Isolation, mapping, and regulated expression of the gene encoding mouse C-type natriuretic peptide
*H. Huang, C. G. Acuff, and M. E. Steinhelper* H1565

Serum interspecies differences in metabolic pathways of bradykinin and [des-Arg$^9$]BK: influence of enalaprilat
*A. Décarie, P. Raymond, N. Gervais, R. Couture, and A. Adam* H1340

Nitric oxide synthase inhibition reduces venous return in porcine endotoxemia
*T. Saetre, O. A. Smiseth, T. Scholz, H. Carlsen, L. Nordsletten, E. Fahlstrøm, and A. O. Aasen* H1325

Power spectral analysis for autonomic influences in heart rate and blood pressure variability in fetal lambs
*Y. Kimura, K. Okamura, T. Watanabe, J. Murotsuki, T. Suzuki, M. Yano, and A. Yajima* H1333

Viscoelastic mechanisms of aortic baroreceptor resetting to hypotension and to hypertension
*J. Xavier-Neto, E. D. Moreira, and E. M. Krieger* H1407

Neural influences on renal responses to acute volume expansion in rats with heart failure
*K. P. Patel, P. L. Zhang, and P. K. Carmines* H1441

Slowing of carotid-cardiac baroreflex with standing and with isometric and dynamic muscle activity
*P. Sundblad and D. Linnarsson* H1363

Influence of apnea on cardiovascular responses to neck suction during exercise
*P. Sundblad and D. Linnarsson* H1370

Frequency response characteristic of sympathetic-mediated vasomotor waves in conscious rats
*H. M. Stauss and K. C. Kregel* H1416

Decreased heart rate variability in transgenic mice overexpressing atrial $\beta_1$-adrenoceptors
*P. Mansier, C. Médigue, N. Charlotte, C. Vermeiren, E. Coraboeuf, E. Deroubai, E. Ratner, B. Chevalier, J. Clairambault, F. Carré, T. Dahkli, B. Bertin, P. Briand, D. Strosberg, and B. Swynghedauw* H1465

Impaired renin response to hemorrhage in hypertensive rabbits
*C. A. Courneya* H1524

Control of renal and mesenteric conductance during hemorrhage in conscious hypertensive rabbits
*G. Weichert and C. A. Courneya* H1531

Coarse graining spectral analysis of HR and BP variability in patients with autonomic failure
*A. P. Blaber, R. L. Bondar, and R. Freeman* H1555

## No. 5. NOVEMBER 1996

## CARDIAC PHYSIOLOGY

Regulation of oxygen diffusion in hypoxic isolated cardiac myocytes
*E. Takahashi and K. Doi* H1734

Direct preconditioning of cardiac ventricular myocytes via adenosine $A_1$ receptor and $K_{ATP}$ channel
*B. T. Liang* H1769

Effects of adenosine and protein kinase C stimulation on mechanical properties of rat cardiac myocytes
*J. W. Lester, K. F. Gannaway, R. A. Reardon, L. D. Koon, and P. A. Hofmann* H1778

Reloading of $Ca^{2+}$-depleted sarcoplasmic reticulum during rest in guinea pig ventricular myocytes
*C. M. N. Terracciano and K. T. MacLeod* H1814

Calcium homeostasis in cardiomyocytes isolated from heat-shocked rats
*R. N. Cornelussen, L. Ver Donck, G. Verellen, M. Borgers, G. J. van der Vusse, R. S. Reneman, and L. H. E. H. Snoeckx* H1938

Role of microtubules in myocyte contractile dysfunction during cardiac hypertrophy in the rat
*Y. Ishibashi, H. Tsutsui, S. Yamamoto, M. Takahashi, K. Imanaka-Yoshida, T. Yoshida, Y. Urabe, M. Sugimachi, and A. Takeshita* H1978

Visualization of doxorubicin-induced oxidative stress in isolated cardiac myocytes
*N. Sarvazyan* H2079

Inactivation of the calcium current is involved in overdrive suppression of rabbit sinoatrial node cells
*E.-I. Watanabe, H. Honjo, M. R. Boyett, I. Kodama, and J. Toyama* H2097

Intracellular protons inhibit transient outward $K^+$ current in ventricular myocytes from diabetic rats
*Z. Xu, K. P. Patel, and G. J. Rozanski* H2154

Model clamp and its application to synchronization of rabbit sinoatrial node cells **(Modeling in Physiology)**
*R. Wilders, E. E. Verheijck, R. Kumar, W. N. Goolsby, A. C. G. Van Ginneken, R. W. Joyner, and H. J. Jongsma* H2168

Cardiomyocyte DNA synthesis and binucleation during murine development **(Rapid Communication)**
*M. H. Soonpaa, K. K. Kim, L. Pajak, M. Franklin, and L. J. Field* H2183

Metabolic basis of decreased transient outward $K^+$ current in ventricular myocytes from diabetic rats **(Rapid Communication)**
*Z. Xu, K. P. Patel, and G. J. Rozanski* H2190

Regulation of $\alpha_1$-, $\beta_1$-, and $\beta_2$-adrenergic receptors in rat heart by norepinephrine
*M. Zhao, H. K. Hagler, and K. H. Muntz* H1762

$Ca^{2+}$ sensitizer Org-30029 reverses acidosis- and BDM-induced contractile depression in canine myocardium
*A. Watanabe, H. Tomoike, and M. Endoh* H1829

Action potentials in right and left ventricles from chronic hypoxic rats: effect of almitrine
*P. Kreher, C. Keriel, and X. Leverve* H1856

Contribution of cytosolic and membrane-bound 5′-nucleotidases to cardiac adenosine production
*A. Darvish, R. W. Pomerantz, P. G. Zografides, and P. J. Metting* H2162

Ischemic preconditioning in human and rat ventricle
*J. C. Cleveland, Jr., M. M. Wollmering, D. R. Meldrum, R. T. Rowland, T. F. Rehring, B. C. Sheridan, A. H. Harken, and A. Banerjee* H1786

Effect of nutritional state on substrate metabolism and contractile function in postischemic rat myocardium
*C. Montessuit, I. Papageorgiou, I. Tardy, and R. Lerch* H2060

Antecedent ischemia reverses effects of adenosine on glycolysis and mechanical function of working hearts
*B. A. Finegan, M. Gandhi, G. D. Lopaschuk, and A. S. Clanachan* H2116

Attenuation of postischemic reperfusion injury is related to prevention of $[Ca^{2+}]_m$ overload in rat hearts
*M. Miyamae, S. A. Camacho, M. W. Weiner, and V. M. Figueredo* H2145

GH replacement fails to improve ventricular function in hypophysectomized rats with myocardial infarction
*Y.-T. Shen, R. T. Wiedmann, J. J. Lynch, W. Grossman, and R. G. Johnson* H1721

Compressibility of perfused passive myocardium
*F. C. P. Yin, C. C. H. Chan, and R. M. Judd* H1864

One-day cold perfusion of bimakalim and butanedione monoxime restores ex situ cardiac function
*D. F. Stowe, B. M. Graf, S. Fujita, and G. J. Gross* H1884

Temporal evaluation of left ventricular remodeling and function in rats with chronic volume overload
*G. L. Brower, J. R. Henegar, and J. S. Janicki* H2071

Habitual exercise attenuates myocardial stiffness in diabetes mellitus in rats
*A. J. Woodiwiss, W. J. Kalk, and G. R. Norton* H2126

## VASCULAR PHYSIOLOGY

Neuropeptide Y reduces macromolecule permeability of coronary endothelial monolayers
*T. Noll, A. Hempel, and H. M. Piper* H1878

Modulation of mitochondrion-mediated oxidative stress by nitric oxide in human placental trophoblastic cells
*N. Goda, M. Suematsu, M. Mukai, K. Kiyokawa, M. Natori, S. Nozawa, and Y. Ishimura* H1893

Roles of calcium and kinases in regulation of thrombin-stimulated preproendothelin-1 transcription
*T. A. Marsen, M. S. Simonson, and M. J. Dunn* H1918

Arginase activity in endothelial cells: inhibition by $N^G$-hydroxy-L-arginine during high-output NO production
*G. M. Buga, R. Singh, S. Pervin, N. E. Rogers, D. A. Schmitz, C. P. Jenkinson, S. D. Cederbaum, and L. J. Ignarro* H1988

Hypoxia induces PECAM-1 phosphorylation and transendothelial migration of monocytes
*V. K. Kalra, Y. Shen, C. Sultana, and V. Rattan* H2025

Activation of human platelets by protein kinase C antibody: role for surface phosphorylation in homeostasis
*A. Babinska, Y. H. Ehrlich, and E. Kornecki* H2134

Nitric oxide inhibits pulmonary artery catalase and $H_2O_2$-associated relaxation
*K. M. Mohazzab-H., R. P. Fayngersh, and M. S. Wolin* H1900

Mechanism of relaxations to C-type natriuretic peptide in veins
*M. Banks, C.-M. Wei, C. H. Kim, J. C. Burnett, Jr., and V. M. Miller* H1907

Effects of anion exchange on intracellular pH and tension in basilar artery of dogs
*J. Yu, B. Y. Ong, J. Zheng, E. J. Cragoe, D. Bose, and R. Bose* H1912

Endothelin receptors are modulated in association with endogenous fluctuations in estrogen
*D. A. Barber, G. C. Sieck, L. A. Fitzpatrick, and V. M. Miller* H1999

Exogenous NO inhibits basal NO release from vascular endothelium in vitro and in vivo
*X.-L. Ma, B. L. Lopez, T. A. Christopher, D. S. Birenbaum, and J. Vinten-Johansen* H2045

Short- and long-term effects of neonatal hypo- and hyperthyroidism on coronary arterioles in rat
*M. I. Heron and K. Rakusan* H1746

Neutrophil enhancement of reperfusion-induced capillary fluid filtration associated with hypercholesterolemia
*N. R. Harris and D. N. Granger* H1755

Role of mast cells in oxidized low-density lipoprotein-induced microvascular dysfunction
*L. Liao and D. N. Granger* H1795

Protease inhibition attenuates microvascular dysfunction in postischemic skeletal muscle
*D. L. Carden and R. J. Korthuis* H1947

Control of arteriovenous anastomoses in rabbit ear model of digital perfusion
*D. C. Pollock, Z. Li, L. A. Koman, E. S. Gordon, and T. L. Smith* H2007

Computational simulations of local vascular heparin deposition and distribution
*M. A. Lovich and E. R. Edelman* H2014

NOS activity in brain and endothelium: relation to hypercapnic rise of cerebral blood flow in rats
*M. Fabricius, I. Rubin, M. Bundgaard, and M. Lauritzen* H2035

Ischemic preconditioning attenuates postischemic leukocyte adhesion and emigration
*T. Akimitsu, D. C. Gute, and R. J. Korthuis* H2052

A sialyl Lewis$^x$-containing carbohydrate reduces infarct size: role of selectins in myocardial reperfusion injury
*D. M. Flynn, A. J. Buda, P. R. Jeffords, and D. J. Lefer* H2086

Mechanisms of protection afforded by preconditioning to endothelial function against ischemic injury
*J.-F. Bouchard and D. Lamontagne* H1801

Method for determining distribution of reflection sites in the arterial system
*F. Pythoud, N. Stergiopulos, N. Westerhof, and J.-J. Meister* H1807

Effects of hemodilution on gastric regional perfusion and intramucosal pH
*M. Kleen, O. Habler, J. Hutter, A. Podtschaske, M. Tiede, G. Kemming, M. Welte, C. Corso, and K. Messmer* H1849

$\beta_2$-Adrenergic dilation of conductance coronary arteries involves flow-dependent NO formation in conscious dogs
*N. Hamdad, Z. Ming, R. Parent, and M. Lavallée* H1926

A time-dependent balance between endothelins and nitric oxide regulating portal resistance after endotoxin
*B. H. J. Pannen, M. Bauer, J. X. Zhang, J. L. Robotham, and M. G. Clemens* H1953

Role of nitric oxide in lung ischemia and reperfusion injury
*T. M. Moore, P. L. Khimenko, P. S. Wilson, and A. E. Taylor* H1970

## INTEGRATIVE CARDIOVASCULAR PHYSIOLOGY

Skeletal muscle β-adrenoreceptors and phosphate metabolism abnormalities in heart failure in rats
*Z. Chati, C. Michel, J. M. Escanye, P. M. Mertes, C. Ribuot, D. Canet, and F. Zannad* H1739

Participation of galanin in baroreflex inhibition of heart rate by hypothalamic PVN in rat
*Y.-L. Chen, S. H. H. Chan, and J. Y. H. Chan* H1823

Daily exercise and gender influence arterial baroreflex regulation of heart rate and nerve activity
*C.-Y. Chen and S. E. DiCarlo* H1840

Blocking L-selectin function attenuates reperfusion injury following hemorrhagic shock in rabbits
*C. Ramamoorthy, S. R. Sharar, J. M. Harlan, T. F. Tedder, and R. K. Winn* H1871

Transfer function analysis of ventilatory influence on systemic arterial pressure in the rat
*T. B. J. Kuo, C. C. H. Yang, and S. H. H. Chan* H2108

Cardiac output mediates the antihypertensive effect of vasopressin in spontaneous hypertension
*S. Balakrishnan and J. R. McNeill* H1728

Dynamics of muscle sympathetic nerve activity in advanced heart failure patients
*A. H. Nguyen, A. Garfinkel, D. O. Walter, M. A. Hamilton, G. C. Fonarow, J. D. Moriguchi, A. Hage, J. N. Weiss, and H. R. Middlekauff* H1962

## No. 6. DECEMBER 1996

## CARDIAC PHYSIOLOGY

Prostaglandin $F_{2\alpha}$ induces cardiac myocyte hypertrophy in vitro and cardiac growth in vivo
*J. Lai, H. Jin, R. Yang, J. Winer, W. Li, R. Yen, K. L. King, F. Zeigler, A. Ko, J. Cheng, S. Bunting, and N. F. Paoni* H2197

Subcellular compartmentalization of $G_s\alpha$ in cardiac myocytes and its redistribution in heart failure
*J. A. Nash, H. K. Hammond, and J. E. Saffitz* H2209

Regulation by acetylcholine of $Ca^{2+}$ current in rabbit atrioventricular node cells
*Y. Habuchi, M. Nishio, H. Tanaka, T. Yamamoto, L.-L. Lu, and M. Yoshimura* H2274

Transient outward current in catecholamine-induced cardiac hypertrophy in the rat
*J. Mészáros, K. O. Ryder, and G. Hart* H2360

Nonspecific inhibition of adenosine-activated $K^+$ current by glibenclamide in guinea pig atrial myocytes
*Y. Song, M. Srinivas, and L. Belardinelli* H2430

$I_K$ of rabbit ventricle is composed of two currents: evidence for $I_{Ks}$
*J. J. Salata, N. K. Jurkiewicz, B. Jow, K. Folander, P. J. Guinosso, Jr., B. Raynor, R. Swanson, and B. Fermini* H2477

Effects of pressure- or volume-overload hypertrophy on passive stiffness in isolated adult cardiac muscle cells
*S. Kato, M. Koide, G. Cooper IV, and M. R. Zile* H2575

Beating affects the posttranscriptional regulation of α-myosin mRNA in cardiac cultures
*P. H. Goldspink, D. B. Thomason, and B. Russell* H2584

Exogenous effects and endogenous production of endothelin in cardiac myocytes: potential significance in heart failure
*P. B. Thomas, E. C. K. Liu, M. L. Webb, R. Mukherjee, L. Hebbar, and F. G. Spinale* H2629

A disrupter of actin microfilaments impairs sulfonylurea-inhibitory gating of cardiac $K_{ATP}$ channels **(Rapid Communication)**
*P. A. Brady, A. E. Alekseev, L. A. Aleksandrova, L. A. Gomez, and A. Terzic* H2710

Mechanisms contributing to pulsus alternans in pressure-overload cardiac hypertrophy
*G. Kotsanas, S. M. Holroyd, R. Young, and C. L. Gibbs* H2490

Transmembrane potential changes caused by shocks in guinea pig papillary muscle
*X. Zhou, W. M. Smith, D. L. Rollins, and R. E. Ideker* H2536

$K_{ATP}$ channels mediate late preconditioning against infarction produced by monophosphoryl lipid A **(Rapid Communication)**
*D. A. Mei, G. T. Elliott, and G. J. Gross* H2723

Dynamics of myocardial adaptation to low-flow ischemia and hypoxemia
*G. Merati, S. Allibardi, L. D. Monti, J. W. de Jong, and M. Samaja* H2300

ATP-sensitive potassium channels regulate stimulated ANF secretion in isolated rat heart
*T. Xu, J.-H. Jiao, R. A. Pence, and A. J. Baertschi* H2339

Superoxide and nitroglycerin stimulate release of $PGF_{2\alpha}$ and $TxA_2$ in isolated rat heart
*S. A. Gupte, T. Okada, and R. Ochi* H2447

Protection of ischemic myocardium by inhibition of contracture in isolated rat heart
*M. Tani, H. Hasegawa, Y. Suganuma, K. Shinmura, Y. Kayashi, and Y. Nakamura* H2515

Cellular basis for burn-mediated cardiac dysfunction in adult rabbits
*J. W. Horton* H2615

Glycogen depletion contributes to ischemic preconditioning in the rat heart in vivo
*P. H. McNulty, A. Darling, and J. M. Whiting* H2283

Impaired pyruvate oxidation but normal glucose uptake in diabetic pig heart during dobutamine-induced work
*J. L. Hall, W. C. Stanley, G. D. Lopaschuk, J. A. Wisneski, R. D. Pizzurro, C. D. Hamilton, and J. G. McCormack* H2320

Regional electrical activation and mechanical function in the partially ischemic left ventricle of dogs
*T. Delhaas, T. Arts, F. W. Prinzen, and R. S. Reneman* H2411

Chronic exercise enhances cardiac $\alpha_1$-adrenergic inotropic responsiveness in rats with mild hypertension
*D. H. Korzick and R. L. Moore* H2599

Inhibition of nitric oxide synthase augments myocardial contractile responses to β-adrenergic stimulation
*J. F. Keaney, Jr., J. M. Hare, J.-L. Balligand, J. Loscalzo, T. W. Smith, and W. S. Colucci* H2646

Right ventricular midwall surface motion and deformation using magnetic resonance tagging **(Modeling in Physiology)**
*A. A. Young, Z. A. Fayad, and L. Axel* H2677

Three-dimensional changes in left and right ventricular geometry in chronic mitral regurgitation **(Modeling in Physiology)**
*A. A. Young, R. Orr, B. H. Smaill, and L. J. Dell'Italia* H2689

## VASCULAR PHYSIOLOGY

Low $Po_2$ inhibits calcium channel activity in arterial smooth muscle cells
*A. Franco-Obregón and J. López-Barneo* H2290

Changes in angiotensin II receptor density and calcium handling during proliferation in SHR aortic myocytes
*S. de F. Côrtes, V. S. Lemos, C. Corriu, and J.-C. Stoclet* H2330

Influence of acute-phase proteins on erythrocyte aggregation
*X. Weng, G. Cloutier, R. Beaulieu, G. O. Roederer* H2346

Impairment of cGMP- and cAMP-mediated vasorelaxations in rats with chronic heart failure
*Y. Nasa, H. Toyoshima, H. Ohaku, Y. Hashizume, A. Sanbe, and S. Takeo* H2228

Nitric oxide-dependent opposite effects of somatostatin on arterial and venous caliber in situ
*M. Szentiványi, Jr., G. L. Nádasy, L. Dézsi, G. Mózes, T. Tulassay, and E. Monos* H2238

Developmental changes in $\alpha_1$-adrenergic receptors, $IP_3$ responses, and NE-induced contraction in cerebral arteries
*L. D. Longo, N. Ueno, Y. Zhao, W. J. Pearce, and L. Zhang* H2313

Coronary vascular and endothelial reactivity changes in transgenic mice overexpressing atrial natriuretic factor
*D. D. Ku, L. Guo, J. Dai, C. G. Acuff, and M. E. Steinhelper* H2368

Role of intracellular alkalinization in inhibition of acetylcholine-induced relaxation by FMLP in rat aorta
*K. Ando and T. Fujita* H2405

ATP-sensitive potassium channels in cultured arterial segments
*T. Kleppisch, B. Winter, and M. T. Nelson* H2462

α-Adrenoceptor activation of a chloride conductance in rat iris arterioles
*D. J. Gould and C. E. Hill* H2469

Characterization of the effects of histamine on porcine tracheobronchial lymph vessels
*L. B. Reeder, V. J. DeFilippi, and M. K. Ferguson* H2501

Vascular endothelial growth factor increases hydraulic conductivity of isolated perfused microvessels
*D. O. Bates and F. E. Curry* H2520

Adenosine inhibits leukocyte-induced vasoconstriction
*T. Minamino, M. Kitakaze, K. Node, H. Funaya, M. Inoue, M. Hori, and T. Kamada* H2622

Role of nitric oxide and cGMP system in regulation of ductus arteriosus tone in ovine fetus
*J. J. Fox, J. W. Ziegler, D. D. Ivy, A. C. Halbower, J. P. Kinsella, and S. H. Abman* H2638

Comparison of linear and nonlinear formulations of the three-element windkessel model **(Modeling in Physiology)**
*R. Fogliardi, M. Di Donfrancesco, and R. Burattini* H2661

Unstable radii in muscular blood vessels **(Modeling in Physiology)**
*C. M. Quick, H. L. Baldick, N. Safabakhsh, T. J. Lenihan, J. K.-J. Li, H. W. Weizsäcker, and A. Noordergraaf* H2669

VEGF induces NO-dependent hyperpermeability in coronary venules **(Rapid Communication)**
*H. M. Wu, Q. Huang, Y. Yuan, and H. J. Granger* H2735

In vivo inhibition of transcellular water channels (aquaporin-1) during acute peritoneal dialysis in rats
*O. Carlsson, S. Nielsen, E. R. Zakaria, and B. Rippe* H2254

Erythrocyte flux in capillary networks during maturation: implications for oxygen delivery
*B. R. Berg and I. H. Sarelius* H2263

$Ca^{2+}$ entry through conductive pathway modulates receptor-mediated increase in microvessel permeability
*P. He, X. Zhang, and F. E. Curry* H2377

Skeletal muscle microvascular and tissue injury after varying durations of ischemia
*A. G. Harris, R. Leiderer, F. Peer, and K. Messmer* H2388

Rapid mast cell activation causes leukocyte-dependent and -independent permeability alterations
*P. Kubes and J. P. Gaboury* H2438

Erythrocyte flow and elasticity of microvessels evaluated by marginal cell-free layer and flow resistance
*N. Maeda, Y. Suzuki, J. Tanaka, and N. Tateishi* H2454

Oxidized low-density lipoproteins and microvascular responses to ischemia-reperfusion
*L. Liao, N. R. Harris, and D. N. Granger* H2508

Permeability-related changes revealed at endothelial cell borders in inflamed venules by lectin binding
*G. Thurston, P. Baluk, A. Hirata, and D. M. McDonald* H2547

Effects of leukocyte capillary plugging in skeletal muscle ischemia-reperfusion injury
*A. G. Harris and T. C. Skalak* H2653

Velocity differences between L- and P-selectin-dependent neutrophil rolling in venules of mouse cremaster muscle in vivo
*U. Jung, D. C. Bullard, T. F. Tedder, and K. Ley* H2740

Pulmonary vascular pressure effects by endothelin-1 in normoxia and chronic hypoxia: a longitudinal study
*S. Tjen-A-Looi, R. Ekman, J. Osborn, and I. Keith* H2246

Ventilation-induced pulmonary vasodilation at birth is modulated by potassium channel activity
*M. Tristani-Firouzi, E. B. Martin, S. Tolarova, E. K. Weir, S. L. Archer, and D. N. Cornfield* H2353

Derivation of the ascending aortic-carotid pressure transfer function with an arterial model
*M. Karamanoglu and M. P. Feneley* H2399

Combined inhibition of P-selectin and ICAM-1 reduces myocardial injury following ischemia and reperfusion
*D. J. Lefer, D. M. Flynn, D. C. Anderson, and A. J. Buda* H2421

HSP induction inhibits iNOS mRNA expression and attenuates hypotension in endotoxin-challenged rats
*G. J. Hauser, E. K. Dayao, K. Wasserloos, B. R. Pitt, and H. R. Wong* H2529

Validation of transit-time ultrasound flow probes to directly measure portal blood flow in conscious rats **(Special Communication)**
*M. S. D'Almeida, S. Cailmail, and D. Lebrec* H2701

ATP: the red blood cell link to NO and local control of the pulmonary circulation **(Rapid Communication)**
*R. S. Sprague, M. L. Ellsworth, A. H. Stephenson, and A. J. Lonigro* H2717

Blood flow response to treadmill running in the rat spinotrapezius muscle **(Rapid Communication)**
*T. I. Musch and D. C. Poole* H2730

## INTEGRATIVE CARDIOVASCULAR PHYSIOLOGY

Firing properties of identified parasympathetic cardiac neurons in nucleus ambiguus
*D. Mendelowitz* H2609

Baroreflex frequency-response characteristics to aortic depressor and carotid sinus nerve stimulation in rats
*W. Fan, P. J. Reynolds, and M. C. Andresen* H2218

Renal hemodynamics in rats with myocardial infarction: selective antagonism of angiotensin receptor subtypes
*P. F. Mento, M. E. Maita, and B. M. Wilkes* H2306

Frequency and amplitude of sympathetic discharges by baroreflexes during hypoxia in conscious rabbits
*S. C. Malpas, R. D. Bendle, G. A. Head, and J. H. Ricketts* H2563

ANG II chronically supports renal and lumbar sympathetic activity in sodium-deprived, conscious rats
*L. Xu and V. L. Brooks* H2591

---

*Subject Index to Volume 40* H2749
*Author Index to Volume 40* H2769

American Journal of Physiology:
Regulatory, Integrative and Comparative Physiology

No. 1. JULY 1996

## REGULATORY AND INTEGRATIVE PHYSIOLOGY

Acceptance of minerals and other compounds by calcium-deprived rats: 24-h tests
*S. E. Coldwell and M. G. Tordoff* R1

Immediate acceptance of minerals and HCl by calcium-deprived rats: brief exposure tests
*S. E. Coldwell and M. G. Tordoff* R11

Indispensable amino acid deficiency and increased seizure susceptibility in rats
*D. W. Gietzen, K. D. Dixon, B. G. Truong, A. C. Jones, J. A. Barrett, and D. S. Washburn* R18

Cortisol disposition and production rate in horses during rest and exercise
*V. Lassourd, V. Gayrard, V. Laroute, M. Alvinerie, P. Benard, D. Courtot, and P. L. Toutain* R25

Subcellular mechanisms of angiotensin II and arginine vasopressin activation of area postrema neurons
*F. M. Consolim-Colombo, M. Hay, T. C. Smith, M. Elizondo-Fournier, and V. S. Bishop* R34

High lipid content enhances the rate of oxygen diffusion through fish skeletal muscle
*N. Desaulniers, T. S. Moerland, and B. D. Sidell* R42

Effects of the lipase inhibitor orlistat on intake and preference for dietary fat in rats
*K. Ackroff and A. Sclafani* R48

Transplantation of lean fetal hypothalamus restores hypothalamic function in Zucker obese rats
*K. Fukagawa, D. S. Knight, H. V. Price, T. Sakata, and P. Tso* R55

Effects of photoperiod and androgen on pituitary function and neuropeptide staining in Siberian hamsters
*E. L. Bittman, A. E. Jetton, C. Villalba, and G. J. Devries* R64

Differentiated sympathetic neural control of the kidney
*G. F. DiBona, L. L. Sawin, and S. Y. Jones* R84

Respiration and medullary blood flow during sinusoidal hypoxia in the peripherally chemodenervated cat
*Q. P. Yu, J. E. Melton, J. A. Neubauer, and N. H. Edelman* R91

An interleukin-1 receptor fragment inhibits spontaneous sleep and muramyl dipeptide-induced sleep in rabbits
*S. Takahashi, L. Kapás, J. Fang, J. M. Seyer, Y. Wang, and J. M. Krueger* R101

Blood pressure and fluid-electrolyte balance in mice with reduced or absent ANP
*S. W. M. John, A. T. Veress, U. Honrath, C. K. Chong, L. Peng, O. Smithies, and H. Sonnenberg* R109

Identification and characterization of ζ-opioid receptor in human colon cancer
*S. D. Hytrek, J. P. Smith, T. J. McGarrity, P. J. McLaughlin, C. M. Lang, and I. S. Zagon* R115

Inhibition of stimulated and basal ACTH by cortisol during ovine pregnancy
*M. Keller-Wood* R130

Fatty acid oxidation modulates the eating response to the fructose analogue 2,5-anhydro-D-mannitol
*N. E. Rawson, P. M. Ulrich, and M. I. Friedman* R144

Microglia digest *Staphylococcus aureus* into low molecular weight biologically active compounds
*E. F. Fincher IV, L. Johannsen, L. Kapás, S. Takahashi, and J. M. Krueger* R149

Hindbrain GRP receptor blockade antagonizes feeding suppression by peripherally administered GRP
*E. E. Ladenheim, J. E. Taylor, D. H. Coy, K. A. Moore, and T. H. Moran* R180

Ciliary neurotrophic factor is catabolic and shares with IL-6 the capacity to induce an acute phase response
*N. J. Espat, T. Auffenberg, J. J. Rosenberg, M. Rogy, D. Martin, C. H. Fang, P. O. Hasselgren, E. M. Copeland, and L. L. Moldawer* R185

Regulation of glucose turnover and hormonal responses during electrical cycling in tetraplegic humans
*M. Kjær, S. F. Pollack, T. Mohr, H. Weiss, G. W. Gleim, F. W. Bach, T. Nicolaisen, H. Galbo, and K. T. Ragnarsson* R191

Acute and chronic angiotensin hypertension: neural and nonneural components, time course, and dose dependency
*Q. Li, W. E. Dale, E. M. Hasser, and E. H. Blaine* R200

Differences in calcium kinetics between adolescent girls and young women
*M. E. Wastney, J. Ng, D. Smith, B. R. Martin, M. Peacock, and C. M. Weaver* R208

Potency of naloxone's anorectic effect in rats is dependent on diet preference
*M. J. Glass, M. Grace, J. P. Cleary, C. J. Billington, and A. S. Levine* R217

Lymphocytes and NK cell activity during repeated bouts of maximal exercise
*H. B. Nielsen, N. H. Secher, N. J. Christensen, and B. K. Pedersen* R222

Effect of vagal and splanchnic nerve section on Fos expression in ferret brain stem after emetic stimuli
*F. M. Boissonade and J. S. Davison* R228

Mechanism of anoxia-induced atrial natriuretic peptide release in the isolated rat atria
*J. P. Skvorak, E. T. Sutton, P. S. Rao, and J. R. Dietz* R237

First and second phases of biphasic fever: two sequential stages of the sickness syndrome?
*A. A. Romanovsky, V. A. Kulchitsky, N. V. Akulich, S. V. Koulchitsky, C. T. Simons, D. I. Sessler, and V. N. Gourine* R244

Evidence for the existence of endothelin-B receptor subtypes and their physiological roles in the rat
*M. Gellai, T. Fletcher, M. Pullen, and P. Nambi* R254

Cardiac output and renal function during insulin hypertension in Sprague-Dawley rats
*M. W. Brands, W. F. Lee, H. L. Keen, M. Alonso-Galicia, D. H. Zappe, and J. E. Hall* R276

Role of the renin-angiotensin system in mediating the effects of posture on renal function
*G. A. Reinhart and T. E. Lohmeier* R282

Naltrexone induces arcuate nucleus neuropeptide Y gene expression in the rat
*C. M. Kotz, M. K. Grace, J. E. Briggs, C. J. Billington, and A. S. Levine* R289

Characteristics of renal sympathetic nerve activity in sodium-retaining disorders
*G. F. DiBona, L. L. Sawin, and S. Y. Jones* R295

Blockade of $AT_1$ receptors enhances baroreflex control of heart rate in conscious rabbits with heart failure
*H. Murakami, J.-L. Liu, and I. H. Zucker* R303

## DEVELOPMENTAL PHYSIOLOGY

Chemoreflex and endocrine components of cardiovascular responses to acute hypoxemia in the llama fetus
*D. A. Giussani, R. A. Riquelme, F. A. Moraga, H. H. G. McGarrigle, C. R. Gaete, E. M. Sanhueza, M. A. Hanson, and A. J. Llanos* R73

Regulation of DNA synthesis of myocardial and epicardial cells in developing rat heart by [$Met^5$]enkephalin
*P. J. McLaughlin* R122

## COMPARATIVE PHYSIOLOGY

Characterization of cholecystokinin binding sites in goldfish brain and pituitary
*B. A. Himick, S. R. Vigna, and R. E. Peter* R137

Structure and concentrating ability of the mammalian kidney: correlations with habitat
*C. A. Beuchat* R157

Expression of sarcoplasmic reticulum $Ca^{2+}$-ATPase isoforms in marlin and swordfish muscle and heater cells
*A. Tullis and B. A. Block* R262

**No. 2. AUGUST 1996**

## REGULATORY AND INTEGRATIVE PHYSIOLOGY

Autoregulation of myocardial glycogen concentration during intermittent hypoxia
*P. H. McNulty, C. Ng, W.-X. Liu, D. Jagasia, G. V. Letsou, J. C. Baldwin, and R. Soufer* R311

Circadian rhythms in the human pupil and eyelid
*R. T. Loving, D. F. Kripke, and L. K. Glazner* R320

Inhibition of nitric oxide synthase produces hypothermia and depresses lipopolysaccharide fever
*T. E. Scammell, J. K. Elmquist, and C. B. Saper* R333

Sodium appetite in the sham-drinking rat after chorda tympani nerve transection
*S. P. Frankmann, S. I. Sollars, and I. L. Bernstein* R339

In the Lyon hypertensive rat, renal function alterations are angiotensin II dependent
*K.-L. Liu, J. Sassard, and D. Benzoni* R346

Bradykinin $B_2$ receptor antagonist increases chloride and water absorption in rat medullary collecting duct
*H. Mukai, W. R. Fitzgibbon, G. Bozeman, H. S. Margolius, and D. W. Ploth* R352

Effect of endogenous angiotensin II on renal nerve activity and its arterial baroreflex regulation
*G. F. DiBona, S. Y. Jones, and L. L. Sawin* R361

5-HT in DVC: disparate effects on TRH analogue-stimulated gastric acid secretion, motility, and cytoprotection
*J. Chi, J. Kemerer, and R. L. Stephens, Jr.* R368

Clearance receptors and endopeptidase 24.11: equal role in natriuretic peptide metabolism in conscious sheep
*C. J. Charles, E. A. Espiner, M. G. Nicholls, A. M. Richards, T. G. Yandle, A. Protter, and T. Kosoglou* R373

Alkali therapy extends the period of survival during hypoxia: studies in rats
*F. A. Halperin, S. Cheema-Dhadli, C. B. Chen, and M. L. Halperin* R381

Basal and glucoprivic-induced changes in extracellular GABA in the ventral hypothalamus of Zucker rats
*S. E. Specter, B. A. Horwitz, and J. L. Beverly* R388

Neutral endopeptidase modulates VIP-induced vasodilation in hamster cheek pouch vessels in situ
*H. Suzuki, X.-P. Gao, C. O. Olopade, and I. Rubinstein* R393

Glycogen depletion of the intrafusal fibers in a mouse muscle spindle during prolonged swimming
*A. Yoshimura, Y. Shimomura, T. Murakami, M. Ichikawa, N. Nakai, C. Fujitsuka, M. Kanematsu, and N. Fujitsuka* R398

Effect of electrical stimulation patterns on glucose transport in rat muscles
*E. Jóhannsson, J. Jensen, K. Gundersen, H. A. Dahl, and A. Bonen* R426

Heredity of muscle fiber composition and correlated response of the synergistic muscle in rats
*M. Suwa, T. Nakamura, and S. Katsuta* R432

Cardiovascular effects of serotonin and DP-5-CT in conscious Long-Evans and Brattleboro rats
*I. K. Anderson, A. G. Ramage, and S. M. Gardiner* R455

Atrial natriuretic hormone inhibits angiotensin II-stimulated sympathetic nerve activity in humans
*T. Matsukawa and T. Mano* R464

Is the onset of obesity in suckling *fa/fa* rats linked to a potentially larger milk intake?
*P. Buchberger and I. Schmidt* R472

Decreased muscle GLUT-4 and contraction-induced glucose transport after eccentric contractions
*S. Kristiansen, S. Asp, and E. A. Richter* R477

Spectral analysis of arterial blood pressure and raphe magnus neuronal activity in anesthetized rats **(Rapid Communication)**
*C. G. Leung and P. Mason* R483

**DEVELOPMENTAL PHYSIOLOGY**

Alterations in myometrial stress during ovine pregnancy and the puerperium
*M. A. Ipson, C. R. Rosenfeld, R. R. Magness, and K. E. Kamm* R446

**COMPARATIVE PHYSIOLOGY**

Heterogeneity and lability of endogenous digitalis-like substances in the plasma of the toad, *Bufo marinus*
*V. P. Butler, Jr., J. F. Morris, T. Akizawa, M. Matsukawa, P. Keating, A. Hardart, and I. Furman* R325

Lactate distribution and metabolism during and after anoxia in the turtle, *Chrysemys picta bellii*
*D. C. Jackson, V. I. Toney, and S. Okamoto* R409

Cardiac performance in relation to oxygen supply varies with dietary lipid composition in sturgeon
*C. Agnisola, D. J. McKenzie, E. W. Taylor, C. L. Bolis, and B. Tota* R417

Alterations in composition and function of surfactant associated with torpor in *Sminthopsis crassicaudata*
*C. Langman, S. Orgeig, and C. B. Daniels* R437

## No. 3. SEPTEMBER 1996

**EDITORIAL REVIEW**

Role of the brain in energy balance and obesity
*B. E. Levin and V. H. Routh* R491

**REGULATORY AND INTEGRATIVE PHYSIOLOGY**

Dynamics of the sleep EEG after an early evening nap: experimental data and simulations
*E. Werth, D.-J. Dijk, P. Achermann, and A. A. Borbély* R501

Opioid growth factor tonically inhibits human colon cancer cell proliferation in tissue culture
*I. S. Zagon, S. D. Hytrek, and P. J. McLaughlin* R511

Dopaminergic receptors and angiotensinogen gene expression in opossum kidney cells
*T.-T. Wang, S. Lachance, A. Delalandre, S. Carrière, and J. S. D. Chan* R519

Interaction between norepinephrine and prostaglandin $E_2$ in the preoptic area of guinea pigs
*E. Sehic, A. L. Ungar, and C. M. Blatteis* R528

Immobilization increases norepinephrine release and reduces NK cytotoxicity in spleen of conscious rat
*N. Shimizu, Y. Kaizuka, T. Hori, and H. Nakane* R537

cAMP regulation of vasopressin mRNA content in hypothalamo-neurohypophysial explants
*C. D. Sladek, K. Y. Fisher, H. E. Sidorowicz, and J. R. Mathiasen* R554

CNS actions of serotonin on cardiovascular function: nonadrenergic, noncholinergic mechanisms
*A. Dedeoğlu and L. A. Fisher* R569

Circadian rhythm and response to light of extracellular glutamate and aspartate in rat suprachiasmatic nucleus
*S. Honma, Y. Katsuno, K. Shinohara, H. Abe, and K.-I. Honma* R579

α-Adrenergic stimulation of thermogenesis in a rat kangaroo (Marsupialia, *Bettongia gaimardi*)
*J.-M. Ye, S. J. Edwards, R. W. Rose, J. T. Steen, M. G. Clark, and E. Q. Colquhoun* R586

Increased expression of cytokine-induced neutrophil chemoattractant in septic rat liver
*C. S. Deutschman, B. A. Haber, K. Andrejko, D. E. Cressman, R. Harrison, E. Elenko, and R. Taub* R593

Plasma ANP levels and protein extravasation during graded expansion with equilibrated whole blood
*V. L. Tucker* R601

Contribution of ANP to plasma protein escape during VE: effects of thiorphan and atrial appendectomy
*V. L. Tucker* R610

Central effects of morphine and morphine-6-glucuronide on tissue protein synthesis
*Y. Hashiguchi, P. E. Molina, V. R. Preedy, P. H. Sugden, M. A. McNurlan, P. J. Garlick, and N. N. Abumrad* R619

Female reproductive cycle influences plasma volume and protein restitution after hemorrhage in the conscious rat
*L. M. Slimmer and M. L. Blair* R626

Distinct expression of heat shock and acute phase genes during regional hepatic ischemia-reperfusion
*C. Gingalewski, N. G. Theodorakis, J. Yang, S. C. Beck, and A. De Maio* R634

Role of cardiac output in mediating arterial blood pressure oscillations
*D. S. O'Leary and D. J. Woodbury* R641

Sensitivity of the renal medullary circulation to plasma vasopressin
*K. G. Franchini and A. W. Cowley, Jr.* R647

Conscious obese rats have impaired reflex bradycardia and enhanced norepinephrine sensitivity
*R. D. Buñag, M. Meyer, N. Vansell, and L. Kerecsen* R654

In vivo increase of the human lens equatorial diameter during accommodation
*R. A. Schachar, C. Tello, D. P. Cudmore, J. M. Liebmann, T. D. Black, and R. Ritch* R670

A new taste reactivity analysis of the integration of taste and physiological state information
*H. J. Grill, M. F. Roitman, and J. M. Kaplan* R677

Muscle-specific and inducible expression of 293-base pair β-myosin heavy chain promoter in transgenic mice
*J. L. Wiedenman, G. L. Tsika, L. Gao, J. J. McCarthy, I. D. Rivera-Rivera, D. Vyas, K. Sheriff-Carter, and R. W. Tsika* R688

Effects of elevated circulating IGF-1 on the extracellular matrix in "high-growth" C57BL/6J mice
*K. Reiser, P. Summers, J. F. Medrano, R. Rucker, J. Last, and R. McDonald* R696

Adenosine $A_1$ receptor and its gene expression in ventricles from spontaneously hypertensive rats
*S.-I. Kobayashi, S. Umemura, Y. Toya, N. Hirawa, S. Hayashi, K. Uchino, and M. Ishii* R704

Predominately glucocorticoid agonist actions of RU-486 in young specific-pathogen-free Zucker rats
*P. J. Havel, B. L. Busch, D. L. Curry, P. R. Johnson, M. F. Dallman, and J. S. Stern* R710

Protein kinase C mediates $Ca^{2+}$-induced cardioadaptation to ischemia-reperfusion injury
*D. R. Meldrum, J. C. Cleveland, Jr., M. B. Mitchell, B. C. Sheridan, F. Gamboni-Robertson, A. H. Harken, and A. Banerjee* R718

Central insulin and macronutrient intake in the rat
*M. Chavez, C. A. Riedy, G. Van Dijk, and S. C. Woods* R727

The CNS site of glucocorticoid negative feedback during LPS- and psychological stress-induced fevers
*L. E. Morrow, J. L. McClellan, J. J. Klir, and M. J. Kluger* R732

Cardiac sympathetic afferent reflex in dogs with congestive heart failure
*W. Wang and I. H. Zucker* R751

Thirst and fluid regulatory responses to hypertonicity in older adults
*N. S. Stachenfeld, G. W. Mack, A. Takamata, L. DiPietro, and E. R. Nadel* R757

Gastric volume rather than nutrient content inhibits food intake
*R. J. Phillips and T. L. Powley* R766

Opioid growth factor ([Met$^5$]enkephalin) prevents the incidence and retards the growth of human colon cancer
*I. S. Zagon, S. D. Hytrek, C. M. Lang, J. P. Smith, T. J. McGarrity, Y. Wu, and P. J. McLaughlin* R780

Circadian timekeeping in hyperactive and hypertensive inbred rat strains
*A. M. Rosenwasser, M. W. Pellowski, and E. D. Hendley* R787

Characterization of the CCK-B/gastrin-like receptor in human colon cancer
*J. P. Smith, E. A. Stock, M. G. Wotring, P. J. McLaughlin, and I. S. Zagon* R797

Role of renal nerves in sodium depletion-induced salt appetite
*R. L. Thunhorst, R. F. Kirby, and A. K. Johnson* R806

Twilight transitions promote circadian entrainment to lengthening light-dark cycles **(Rapid Communication)**
*Z. Boulos, M. Macchi, and M. Terman* R813

Behavioral, endocrine, and hypothalamic responses to involuntary overfeeding **(Rapid Communication)**
*R. J. Seeley, C. A. Matson, M. Chavez, S. C. Woods, M. F. Dallman, and M. W. Schwartz* R819

## COMPARATIVE PHYSIOLOGY

Oxidative damage and antioxidants in *Rana sylvatica*, the freeze-tolerant wood frog
*D. R. Joanisse and K. B. Storey* R545

Glucose and amino acid absorption in house sparrow intestine and its dietary modulation
*E. Caviedes-Vidal and W. H. Karasov* R561

Branchial and systemic roles of adenosine receptors in rainbow trout: an in vivo microscopy study
*L. Sundin and G. E. Nilsson* R661

Ammonia movement and distribution after exercise across white muscle cell membranes in rainbow trout
*Y. Wang, G. J. F. Heigenhauser, and C. M. Wood* R738

**No. 4. OCTOBER 1996**

## REGULATORY AND INTEGRATIVE PHYSIOLOGY

Photoperiod-dependent correlation between light-induced SCN c-*fos* expression and resetting of circadian phase
*Z. Trávníčková, A. Sumová, R. Peters, W. J. Schwartz, and H. Illnerová* R825

Lack of antioxidant adaptation to short-term aerobic training in human muscle
*P. M. Tiidus, J. Pushkarenko, and M. E. Houston* R832

Application of acute maximal exercise to protect orthostatic tolerance after simulated microgravity
*K. A. Engelke, D. F. Doerr, and V. A. Convertino* R837

Central administration of GLP-1-(7—36) amide inhibits food and water intake in rats
*M. Tang-Christensen, P. J. Larsen, R. Göke, A. Fink-Jensen, D. S. Jessop, M. Møller, and S. P. Sheikh* R848

Novel regulation of peripheral gustatory function by the immune system
*L. M. Phillips and D. L. Hill* R857

Cytochrome *P*-450-dependent HETEs: profile of biological activity and stimulation by vasoactive peptides
*M. A. Carroll, M. Balazy, P. Margiotta, D.-D. Huang, J. R. Falck, and J. C. McGiff* R863

Convergent carotid sinus nerve and superior laryngeal nerve afferent inputs to neurons in the NTS
*S. W. Mifflin* R870

$AT_1$ and $TxA_2/PGH_2$ receptors maintain hypertension throughout 2K,1C Goldblatt hypertension in the rat
*C. S. Wilcox, J. Cardozo, and W. J. Welch* R891

VIP decelerates non-REM-REM cycles and modulates hormone secretion during sleep in men
*H. Murck, J. Guldner, M. Colla-Müller, R.-M. Frieboes, T. Schier, K. Wiedemann, F. Holsboer, and A. Steiger* R905

Interactions between postprandial thermogenesis, sensory stimulation of feeding, and hunger
*J. LeBlanc and J. Soucy* R936

No evidence of renal toxicity from amalgam fillings
*G. Sandborgh-Englund, A. T. Nygren, J. Ekstrand, and C.-G. Elinder* R941

Evidence for the utilization of peptides for milk protein synthesis in the lactating dairy goat in vivo
*F. R. C. Backwell, B. J. Bequette, D. Wilson, J. A. Metcalf, M. F. Franklin, D. E. Beever, G. E. Lobley, and J. C. MacRae* R955

Cutaneous microvascular flow in the foot during simulated variable gravities
*D. S. Chang, G. A. Breit, J. R. Styf, and A. R. Hargens* R961

Dissociation of temperature changes and anorexia after experimental colitis and LPS administration in rats
*S. J. Larson, S. M. Collins, and H. P. Weingarten* R967

Permissive and obligatory roles of NO in cerebrovascular responses to hypercapnia and acetylcholine
*C. Iadecola and F. Zhang* R990

Circadian rhythms in renal function in hypertensive TGR(mRen-2)27 rats and their normotensive controls
*M. Pons, A. Schnecko, K. Witte, B. Lemmer, J. M. Waterhouse, and J. Cambar* R1002

Interpretation of sham feeding data: curve-shift studies
*H. P. Weingarten, A. Duong, and D. Elston* R1009

Renal sympathetic nerve activity during cardiac ischemia and reperfusion in rats
*E. E. Ustinova and H. D. Schultz* R1033

Atrial natriuretic peptide in multiple system atrophy
*M. Bevilacqua, G. Norbiato, V. Righini, L. Castelli, A. Rogolino, R. Furlan, S. Piazza, E. Chebat, and T. Vago* R1047

Respiratory motor responses to cranial nerve afferent stimulation in rats
*F. Hayashi and D. R. McCrimmon* R1054

Pregnancy-associated sleep changes in the rat
*M. Kimura, S.-Q. Zhang, and S. Inoué* R1063

Processing of vestibular and other inputs by the caudal ventrolateral medullary reticular formation
*B. C. Steinbacher, Jr., and B. J. Yates* R1070

Age-related alterations in the fractal scaling of cardiac interbeat interval dynamics
*N. Iyengar, C.-K. Peng, R. Morin, A. L. Goldberger, and L. A. Lipsitz* R1078

Renin-angiotensin system modulates renal bradykinin production
*H. M. Siragy, A. A. Jaffa, H. S. Margolius, and R. M. Carey* R1090

Central infusions of leptin and GLP-1-(7—36) amide differentially stimulate c-FLI in the rat brain **(Rapid Communication)**
*G. Van Dijk, T. E. Thiele, J. C. K. Donahey, L. A. Campfield, F. J. Smith, P. Burn, I. L. Bernstein, S. C. Woods, and R. J. Seeley* R1096

## DEVELOPMENTAL PHYSIOLOGY

Adenosine causes cAMP-dependent activation of chick embryo red cell carbonic anhydrase and 2,3-DPG synthesis
*S. Glombitza, S. Dragon, M. Berghammer, M. Pannermayr, and R. Baumann* R973

Norepinephrine-mediated hypoxic stimulation of embryonic red cell carbonic anhydrase and 2,3-DPG synthesis
*S. Dragon, S. Glombitza, R. Götz, and R. Baumann* R982

Development of heart rate power spectra reveals neonatal peculiarities of cardiorespiratory control
*A. Patzak, K. Lipke, W. Orlow, R. Mrowka, H. Stauss, E. Windt, P. B. Persson, and E. Schubert* R1025

Enhanced reproductive responses to melatonin in juvenile Siberian hamsters
*B. J. Prendergast, K. K. Kelly, I. Zucker, and M. R. Gorman* R1041

## COMPARATIVE PHYSIOLOGY

Siberian hamsters free run or become arrhythmic after a phase delay of the photocycle
*N. F. Ruby, A. Saran, T. Kang, P. Franken, and H. C. Heller* R881

Tissue-specific changes in protein synthesis rates in vivo during anoxia in crucian carp
*R. W. Smith, D. F. Houlihan, G. E. Nilsson, and J. G. Brechin* R897

Development of cardiovascular responses to hypoxia in larvae of the frog *Xenopus laevis*
*R. Fritsche and W. Burggren* R912

Relationship between anoxia exposure and antioxidant status in the frog *Rana pipiens*
*M. Hermes-Lima and K. B. Storey* R918

Whole body autoradiography and microautoradiography in eels after intra-arterial administration of $^{125}$I-labeled eel ANP
*H. Sakaguchi, H. Suzuki, H. Hagiwara, H. Kaiya, Y. Takei, M. Ito, S. Shibabe, and S. Hirose* R926

Cardiac force and high-energy phosphates under metabolic inhibition in four ectothermic vertebrates
*T. Hartmund and H. Gesser* R946

Effects of hypoxia and hypercapnia on patterns of sleep-associated apnea in elephant seal pups
*W. Milsom, M. Castellini, M. Harris, J. Castellini, D. Jones, R. Berger, S. Bahrma, L. Rea, and D. Costa* R1017

Kinetics of hexose uptake by the small and large intestine of the chicken
*C. Amat, J. M. Planas, and M. Moretó* R1085

## No. 5. NOVEMBER 1996

## REGULATORY AND INTEGRATIVE PHYSIOLOGY

High plasma cholesterol, but low triglycerides and plaque-free arteries, in Mexican free-tailed bats
*E. P. Widmaier, E. R. Gornstein, J. L. Hennessey, J. M. Bloss, J. A. Greenberg, and T. H. Kunz* R1101

Relationship between cold-induced thermoregulation and spontaneous rapid body weight loss of aging F344 rats
*R. B. McDonald, M. Florez-Duquet, C. Murtagh-Mark, and B. A. Horwitz* R1115

Differential regulation of $Na^+$-$K^+$-ATPase in the obese Zucker rat
*A. Ferrer-Martínez, A. Felipe, F. J. Casado, and M. Pastor-Anglada* R1123

Hepatic capillary pressure is estimated using triple vascular occlusion method in isolated canine liver
*T. Shibamoto, H.-G. Wang, S. Tanaka, and S. Koyama* R1130

Chronic central nervous system exposure to interleukin-1β causes catabolism in the rat
*A. G. Hill, L. Jacobson, J. Gonzalez, J. Rounds, J. A. Majzoub, and D. W. Wilmore* R1142

Hyperinsulinemia in rats with obesity-inducing amygdaloid lesions
*B. M. King, J. T. Cook, and M. F. Dallman* R1156

Thyrotropin-releasing hormone stimulates perinatal rat respiration in vitro
*J. J. Greer, Z. Al-Zubaidy, and J. E. Carter* R1160

Alanyl-glutamine prevents muscle atrophy and glutamine synthetase induction by glucocorticoids
*R. C. Hickson, L. E. Wegrzyn, D. F. Osborne, and I. E. Karl* R1165

Bispectral analysis of complex patterns of sympathetic nerve discharge
*G. L. Gebber, S. Zhong, and Y. Paitel* R1173

Angiotensin II and bladder obstruction in the rat: influence on hypertrophic growth and contractility
*K. Persson, R. K. Pandita, K. Waldeck, and K.-E. Andersson* R1186

Endogenous modulators of TNF and IL-1 response are under partial control of TNF in baboon bacteremia
*H. Redl, G. Schlag, E. Paul, S. Bahrami, W. A. Buurman, R. M. Strieter, S. L. Kunkel, J. Davies, and R. Foulkes* R1193

Renin secretion in conscious Lyon hypertensive rats
*S. Bertolino, C. Julien, I. A. Medeiros, G. Cuisinaud, M. Vincent, and C. Barrès* R1199

Efficient oligonucleotide delivery using the HVJ-liposome method in the central nervous system
*K. Yamada, A. Moriguchi, R. Morishita, M. Aoki, Y. Nakamura, H. Mikami, T. Oshima, M. Ninomiya, Y. Kaneda, J. Higaki, and T. Ogihara* R1212

Role of excitatory amino acid receptors in cardiorespiratory coupling in ventrolateral medulla
*T. Miyawaki, J. Minson, L. Arnolda, J. Chalmers, I. Llewellyn-Smith, and P. Pilowsky* R1221

Role of CRH in the effects of 5-HT-receptor agonists on food intake and metabolic rate
*S. Bovetto, C. Rouillard, and D. Richard* R1231

Influence of elevated muscle temperature on metabolism during intense, dynamic exercise
*M. A. Febbraio, M. F. Carey, R. J. Snow, C. G. Stathis, and M. Hargreaves* R1251

Modulation of procoagulant and fibrinolytic system components of mesothelial cells by inflammatory mediators
*T. Sitter, K. Tvet, H. Fricke, H. Schiffl, E. Held, and T. Kooistra* R1256

Nonuniform sympathetic nerve responses after sustained elevation in arterial pressure
*D. E. Claassen, D. A. Morgan, T. Hirai, and M. J. Kenney* R1264

Sensitization of the colonic response to novel stress after previous stressful experience
*R. Stam, G. Croiset, L. M. A. Akkermans, and V. M. Wiegant* R1270

Inhibitors of cytochrome *P*-450 augment fever induced by interleukin-1β
*T. Nakashima, Y. Harada, S. Miyata, and T. Kiyohara* R1274

Tissue-specific regulation of lipoprotein lipase by isoproterenol in normal-weight humans
*R. H. Eckel, D. R. Jensen, I. R. Schlaepfer, and T. J. Yost* R1280

Activation of $GABA_B$ receptors increases a potassium conductance in rat bulbospinal neurons of the C1 area
*Y.-W. Li and P. G. Guyenet* R1304

Brief hypoxic stress downregulates *E. coli*-induced IL-1α and IL-1β gene expression in perfused liver
*G. M. Matuschak, C. A. Johanns, Z. Chen, J. Gaynor, and A. J. Lechner* R1311

Changes in insulin action, triglycerides, and lipid composition during sucrose feeding in rats
*M. J. Pagliassotti, P. A. Prach, T. A. Koppenhafer, and D. A. Pan* R1319

Relationship between basal NO release and cyclooxygenase products in the normal rat kidney
*C. Baylis, B. Slangen, S. Hussain, and C. Weaver* R1327

RU-486 blocks differentially suppressive effect of stress on in vivo anti-KLH immunoglobulin response
*M. Fleshner, F. X. Brennan, K. Nguyen, L. R. Watkins, and S. F. Maier* R1344

Atrial natriuretic peptide and sodium homeostasis in compensated heart failure
*T. E. Lohmeier, H. L. Mizelle, G. A. Reinhart, J.-P. Montani, C. E. Hord, Jr., and R. H. Didlake* R1353

Renal organic anion secretion: evidence for dopaminergic and adrenergic regulation
*P. A. Halpin and J. L. Renfro* R1372

Enhanced thermogenesis during recovery from diet-induced weight gain in the rat
*N. G. Almeida, D. A. Levitsky, and B. Strupp* R1380

Manipulation of potential perinatal zeitgebers for the juvenile circadian temperature rhythm in rats
*B. Nuesslein-Hildesheim and I. Schmidt* R1388

Vasopressin and renin-angiotensin maintain arterial pressure during PEEP in nonexpanded, conscious dogs
*G. Kaczmarczyk, S. Vogel, M. Krebs, H. Bünger, and A. Scholz* R1396

Cachectic effect of ciliary neurotrophic factor on innervated skeletal muscle
*D. Martin, E. Merkel, K. K. Tucker, J. L. McManaman, D. Albert, J. Relton, and D. A. Russell* R1422

Effect of extended sleep deprivation on tumor growth in rats
*B. M. Bergmann, A. Rechtschaffen, M. A. Gilliland, and J. Quintans* R1460

## DEVELOPMENTAL PHYSIOLOGY

Transfer of $Cl^-$ across placenta of anesthetized rat
*J. Štulc, B. Štulcová, S. Husain, and C. P. Sibley* R1107

An important role for endogenous synthesis of arginine in maintaining arginine homeostasis in neonatal pigs
*N. E. Flynn and G. Wu* R1149

Blood pressure and HR in the fetal lamb: relationship to hypoglycemia, hypoxemia, and growth restriction
*S. S. Daniel, R. I. Stark, M. M. Myers, P. J. Tropper, and Y.-I. Kim* R1415

Dietary sodium effects on renin and angiotensinogen gene expression in preweanling WKY and SHR
*R. F. Kirby, W. V. Page, A. K. Johnson, and J. E. Robillard* R1439

Zinc kinetics in preterm infants: a compartmental model based on stable isotope data
*M. E. Wastney, P. Angelus, R. M. Barnes, and K. N. S. Subramanian* R1452

## COMPARATIVE PHYSIOLOGY

Signal transduction, second messenger, and protein kinase responses during freezing exposures in wood frogs
*C. P. Holden and K. B. Storey* R1205

Lactate and metabolic $H^+$ transport and distribution after exercise in rainbow trout white muscle
*Y. Wang, G. J. F. Heigenhauser, and C. M. Wood* R1239

Molecular activity of sodium pumps in endotherms and ectotherms
*P. L. Else, D. J. Windmill, and V. Markus* R1287

A comparison of the metabolic cost of protein synthesis in stenothermal and eurythermal isopod crustaceans
*N. M. Whiteley, E. W. Taylor, and A. J. El Haj* R1295

Cardiovascular actions of trout urotensin II in the conscious trout, *Oncorhynchus mykiss*
*J.-C. Le Mevel, K. R. Olson, D. Conklin, D. Waugh, D. D. Smith, H. Vaudry, and J. M. Conlon* R1335

Natural hypothermia and sleep deprivation: common effects on recovery sleep in the Djungarian hamster
*T. Deboer and I. Tobler* R1364

Metabolic and energy correlates of intracellular pH in progressive fatigue of squid (*L. brevis*) mantle muscle
*H. O. Pörtner, E. Finke, and P. G. Lee* R1403

Effect of chronic cold exposure on Na-dependent D-glucose transport along small intestine in ducklings
*V. Thomas, B. Pichon, G. Crouzoulon, and H. Barré* R1429

Regulation of skeletal muscle metabolism in the lizard *Dipsosaurus dorsalis* by fructose-2,6-bisphosphate
*D. A. Scholnick and T. T. Gleeson* R1447

No. 6. DECEMBER 1996

## REGULATORY AND INTEGRATIVE PHYSIOLOGY

Regulation of microvascular filtration in the myocardium by interstitial fluid pressure
*R. H. Stewart, D. A. Rohn, U. Mehlhorn, K. L. Davis, S. J. Allen, and G. A. Laine* R1465

Forebrain angiotensin type 1 receptors and parabrachial serotonin in the control of NaCl and water intake
*D. S. A. Colombari, J. V. Menani, and A. K. Johnson* R1470

Phosphaturic effect of L-NMMA in the presence of parathyroid hormone
*M. J. Onsgard-Meyer, R. J. Kerrigan, M. Collins, A. A. Khraibi, and F. G. Knox* R1477

Reorganization of the innervation of the vas deferens after sympathetic decentralization
*K. Kihara, H. Kakizaki, and W. C. de Groat* R1481

Functional response to graded increases in renal nerve activity during hypoxia in conscious rabbits
*S. C. Malpas, A. Shweta, W. P. Anderson, and G. A. Head* R1489

Subthreshold stimulation of a serotonin 5-$HT_3$ reflex attenuates cardiovascular reflexes
*R. Veelken, K. F. Hilgers, T. Ditting, W. Fierlbeck, H. Geiger, and R. E. Schmieder* R1500

Aging affects development and persistence of feeding-associated circadian rhythm in rat plasma corticosterone
*S. Honma, Y. Katsuno, H. Abe, and K. Honma* R1514

Role of cholecystokinin in the anorexia produced by duodenal delivery of glucose in rats
*T. Woltman and R. Reidelberger* R1521

Ventricular remodeling during development and recovery from modified tachycardia-induced cardiomyopathy model
*K. Yamamoto, J. C. Burnett, Jr., L. M. Meyer, L. Sinclair, T. L. Stevens, and M. M. Redfield* R1529

Water transport in collecting ducts of Japanese quail
*H. Nishimura, C. Koseki, and T. B. Patel* R1535

Stimulation of $Na^+$-$K^+$-$2Cl^-$ cotransport in rat medullary thick ascending limb by dopamine
*Y. Aoki, F. E. Albrecht, K. R. Bergman, and P. A. Jose* R1561

Glutamate microinjections in cerebellar cortex reproduce cerebrovascular effects of parallel fiber stimulation
*G. Yang and C. Iadecola* R1568

Peripheral bombesin induces gastric vagal afferent activation in rats
*E. Yoshida-Yoneda, T. J. O-Lee, J. Y. Wei, S. R. Vigna, and Y. Taché* R1584

Age-related changes in the responsiveness of apolipoprotein $A_1$ to thyroid hormone
*A. D. Mooradian, N. C. W. Wong, and G. N. Shah* R1602

Three types of postsynaptic glutamatergic receptors are activated in DMNX neurons upon stimulation of NTS
*A. Willis, M. Mihalevich, R. A. Neff, and D. Mendelowitz* R1614

Unilateral smoke inhalation in sheep: effect on left lung lymph flow with right lung injury
*Y. Kikuchi, L. D. Traber, D. N. Herndon, and D. L. Traber* R1620

Impairment of vascular function is associated with an age-related increase of lipid peroxidation in rats
*S. T. Davidge, C. A. Hubel, and M. K. McLaughlin* R1625

Lysine acetylsalicylate modifies aphagia and thermogenic changes induced by lateral hypothalamic lesion
*M. Monda, A. Sullo, E. De Luca, and M. P. Pellicano* R1638

Chronic infusion of islet amyloid polypeptide causes anorexia in rats
*U. Arnelo, J. Permert, T. E. Adrian, J. Larsson, P. Westermark, and R. D. Reidelberger* R1654

IL-1 type I receptor mediates acute phase response to turpentine, but not lipopolysaccharide, in mice
*L. R. Leon, C. A. Conn, M. Glaccum, and M. J. Kluger* R1668

Vectorial efflux of cGMP and its dependence on sodium in the cortical collecting duct
*B. A. Stoos and J. L. Garvin* R1676

Measurement of tissue volume during non-steady state high-intensity muscle contraction
*D. S. Ward, M. T. Hamilton, and P. D. Watson* R1682

GABA release in posterior hypothalamus across sleep-wake cycle
*D. Nitz and J. M. Siegel* R1707

Functional evidence for L-type $Ca^{2+}$ channels controlling ANG II-induced adrenal catecholamine release in vivo
*D. Martineau, R. Briand, and N. Yamaguchi* R1713

Stimulation of aortic nerve evokes three different response patterns in neurons of rostral VLM of the rat
*A. Zagon and K. M. Spyer* R1720

$\beta_3$-Adrenoceptor in guinea pig brown and white adipocytes: low expression and lack of function
*C. Atgié, G. Tavernier, F. D'Allaire, T. Bengtsson, L. Marti, C. Carpéné, M. Lafontan, L. J. Bukowiecki, and D. Langin* R1729

Body temperature and sleep in intact and ovariectomized female rats
*H. Li and E. Satinoff* R1753

Cardiac hypertrophy and telemetered blood pressure 6 wk after baroreceptor denervation in normotensive rats
*B. N. Van Vliet, L. Hu, T. Scott, L. Chafe, and J.-P. Montani* R1759

Leptin reduces juvenile fat stores by altering the circadian cycle of energy expenditure **(Rapid Communication)**
*O. Stehling, H. Döring, J. Ertl, G. Preibisch, and I. Schmidt* R1770

Leptin inhibits prehibernation hyperphagia and reduces body weight in arctic ground squirrels **(Rapid Communication)**
*O. A. Ormseth, M. Nicolson, M. A. Pelleymounter, and B. B. Boyer* R1775

## DEVELOPMENTAL PHYSIOLOGY

Angiotensin II and the maturation of renal cortical $Na^+/H^+$ exchanger activity during fetal life in sheep
*E. N. Guillery, M. S. Mathews, J. Orlowski, and J. E. Robillard* R1507

Ontogeny of blood-brain barrier function in ovine fetuses, lambs, and adults
*B. S. Stonestreet, C. S. Patlak, K. D. Pettigrew, C. B. Reilly, and H. F. Cserr* R1594

Intravenous infusion of insulin-like growth factor I in fetal sheep reduces hepatic IGF-I and IGF-II mRNAs
*K. L. Kind, J. A. Owens, F. Lok, J. S. Robinson, K. J. Quinn, L. Mundy, R. S. Gilmour, and P. C. Owens* R1632

Arginine vasopressin modulation of arterial baroreflex responses in fetal and newborn sheep
*A. M. Nuyt, J. L. Segar, A. T. Holley, M. S. O'Mara, M. W. Chapleau, and J. E. Robillard* R1643

Responses of fetal sheep to reduced maternal renal blood flow and maternal hypertension
*E. R. Lumbers, J. H. Burrell, A. D. Stevens, and C. Bernasconi* R1691

Mechanisms of maternofetal chloride transfer across the human placenta perfused in vitro
*I. M. Doughty, J. D. Glazier, S. L. Greenwood, R. D. H. Boyd, and C. P. Sibley* R1701

Upregulation of endothelial and neuronal constitutive nitric oxide synthase in pregnant rats
*D.-L. Xu, P.-Y. Martin, J. St. John, P. Tsai, S. N. Summer, M. Ohara, J. K. Kim, and R. W. Schrier* R1739

## COMPARATIVE PHYSIOLOGY

Chloride and taurine effluxes occur by different pathways in skate erythrocytes
*E. M. Davis-Amaral, M. W. Musch, and L. Goldstein* R1544

Allometry of mitochondrial proton leak: influence of membrane surface area and fatty acid composition
*R. K. Porter, A. J. Hulbert, and M. D. Brand* R1550

$Na^+$-D-glucose cotransport by intestinal BBMVs of the Antarctic fish *Trematomus bernacchii*
*M. Maffia, R. Acierno, E. Cillo, and C. Storelli* R1576

Cellular immunity is not compromised by high serum corticosterone concentrations in prairie voles
*S. L. Klein, S. E. Taymans, A. C. DeVries, and R. J. Nelson* R1608

Decreased total ventricular and mitochondrial protein synthesis during extended anoxia in turtle heart
*J. R. Bailey and W. R. Driedzic* R1660

Synergistic effect of acidification and hypoxia: in vivo $^{31}P$-NMR and respirometric study in fishes
*V. V. Ginneken, G. van den Thillart, A. Addink, and C. Erkelens* R1746

*Subject Index to Volume 40* R1781
*Author Index to Volume 40* R1797

# CORRIGENDA

*Volume 270, May 1996*
*Volume 39, May 1996*

*Pages R963–R970*: M. R. Opp, P. L. Rady, T. K. Hughes, Jr., P. Cadet, S. K. Tyring, and E. M. Smith. "Human immunodeficiency virus envelope glycoprotein 120 alters sleep and induces cytokine mRNA expression in rats." On p. R968, Fig. 3 should appear as below.

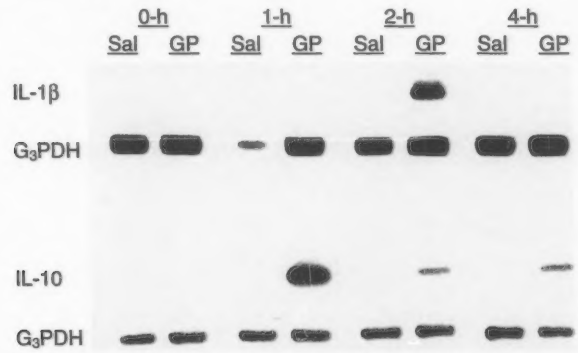


Fig. 3. HIV-$1_{IIIB}$ envelope gp120-induced interleukin (IL)-β and IL-10 mRNA expression in rat hypothalamus. Rats were injected intracerebroventricularly with either vehicle (pyrogen-free saline; Sal) or 100 ng gp120 (GP) at dark onset and killed at *time 0* (immediately after injection) or at indicated time points. Two micrograms total RNA was extracted from tissue samples and subjected to reverse transcriptase-coupled polymerase chain reaction (RT-PCR). Results of Southern blot analysis with rat IL-1β- or rat IL-10-specific probes of RT-PCR products are depicted. See *Molecular methods* for conditions. $G_3PDH$, glyceraldehyde-3-phosphate dehydrogenase (internal control gene).

# CORRIGENDA

*Volume 271, October 1996*
*Volume 40, October 1996*

*Pages R837–R847*: K. A. Engelke, D. F. Doerr, and V. A. Convertino. "Application of acute maximal exercise to protect orthostatic tolerance after simulated microgravity." On p. 837, the author line of the article and abstract and the affiliation line should read as follows:

KEITH A. ENGELKE, DONALD F. DOERR, **CRAIG G. CRANDALL**, AND VICTOR A. CONVERTINO
*Department of Physiology, University of Florida, Gainesville, Florida 32610; National Aeronautics and Space Administration-Kennedy Space Center, Cape Canaveral, Florida 32899;* ***Department of Physiology, University of North Texas Health Science Center, Ft. Worth, Texas 76107****; and Physiology Research Branch, Clinical Science Division, Brooks Air Force Base, Texas 78235*

American Journal of Physiology:
Renal, Fluid and Electrolyte Physiology

No. 1. JULY 1996

**EDITORIAL**

*M. L. Zeidel* F1

**BRIEF REVIEW**

Phosphodiesterase activity as a mediator of renal resistance to ANP in pathological salt retention
*E. Y. W. Lee and M. H. Humphreys* F3

Aldosterone-dependent regulation of Na-K-ATPase subunit mRNA in the rat CCD: competitive PCR analysis
*K. Tsuchiya, G. Giebisch, and P. A. Welling* F7

Renal reserve during human pregnancy
*S. N. Sturgiss, R. Wilkinson, and J. M. Davison* F16

Extracellular chloride regulates mesangial cell calcium response to vasopressor peptides
*Z. S. Stevanovic, M. W. Salter, and C. I. Whiteside* F21

Expression and localization of prostaglandin $EP_3$ receptor mRNA in the immature rabbit kidney
*M. Bonilla-Felix and W. Jiang* F30

Genomic structure and regulation of Kcn1, a cGMP-gated potassium channel
*X. Yao, Y. Liu, F. Tung, and G. V. Desir* F37

Tubulogenesis from isolated single cells of adult mammalian kidney: clonal analysis with a recombinant retrovirus
*H. D. Humes, J. C. Krauss, D. A. Cieslinski, and A. J. Funke* F42

A ureteric bud cell line induces nephrogenesis in two steps by two distinct signals
*J. Barasch, L. Pressler, J. Connor, and A. Malik* F50

Quantitation of aquaporin-2 abundance in microdissected collecting ducts: axial distribution and control by AVP
*B. K. Kishore, J. M. Terris, and M. A. Knepper* F62

$\beta_2$-Adrenergic function in cultured rat proximal tubule epithelial cells
*H. Singh and S. Linas* F71

Differential regulation of kallikrein, kininogen, and kallikrein-binding protein in arterial hypertensive rats
*C. Chao, P. Madeddu, C. Wang, Y. Liang, L. Chao, and J. Chao* F78

Afferent arteriolar response to arachidonic acid: involvement of metabolic pathways
*J. D. Imig and L. G. Navar* F87

Transcriptional and posttranscriptional mechanisms regulate human renin gene expression in Calu-6 cells
*J. A. Lang, L.-H. Ying, B. J. Morris, and C. D. Sigmund* F94

Characterization and distribution of albumin binding protein in normal rat kidney
*A. L. Cessac-Guillemet, F. Mounier, C. Borot, H. Bakala, M. Perichon, M. Schaeverbeke, and J. Schaeverbeke* F101

PDGF and IL-1 induce and activate specific protein kinase C isoforms in mesangial cells
*M. B. Ganz, B. Saksa, R. Saxena, K. Hawkins, and J. R. Sedor* F108

Insulin resistance but IGF-I sensitivity in chronic renal failure
*R. H. K. Mak* F114

Transforming growth factor-β modulation of the α1(IV) collagen gene in murine proximal tubular cells
*G. S. Kuncio, R. Alvarez, S. Li, P. D. Killen, and E. G. Neilson* F120

The 3′-nontranslated region of rat renal glutaminase mRNA contains a pH-responsive stability element
*W. R. Hansen, N. Barsic-Tress, L. Taylor, and N. P. Curthoys* F126

Dietary $HCO_3$ reduces distal tubule acidification by increasing cellular $HCO_3$ secretion
*D. E. Wesson* F132

Effects of angiotensin II on electrolyte transport in the early and late distal tubule in rat kidney
*T. Wang and G. Giebisch* F143

$\alpha_2$-Adrenergic-mediated inhibition of water and urea permeability in the rat IMCD
*A. J. Rouch and L. H. Kudo* F150

Coupling of entry to exit by peritubular $K^+$ permeability in a mathematical model of rat proximal tubule
*A. M. Weinstein* F158

Expression of aquaporins-1 and -2 during nephrogenesis and in autosomal dominant polycystic kidney disease
*O. Devuyst, C. R. Burrow, B. L. Smith, P. Agre, M. A. Knepper, and P. D. Wilson* F169

Abnormal postpartum renal development and cystogenesis in the bcl-2 (−/−) mouse
*C. M. Sorenson, B. J. Padanilam, and M. R. Hammerman* F184

Pharmacokinetics and renal metabolism of atrial natriuretic factor during rat pregnancy
*S. Omer, D. R. Varma, P. Cernacek, and S. Mulay* F194

Response of hepatic amino acid consumption to chronic metabolic acidosis
*L. Boon, P. J. E. Blommaart, A. J. Meijer, W. H. Lamers, and A. C. Schoolwerth* F198

Expression of the renal 25-hydroxyvitamin D-24-hydroxylase gene: regulation by dietary phosphate
*S. Wu, J. Finch, M. Zhong, E. Slatopolsky, M. Grieff, and A. J. Brown* F203

Role of reactive oxygen metabolites in DNA damage and cell death in chemical hypoxic injury to LLC-$PK_1$ cells
*H. Hagar, N. Ueda, and S. V. Shah* F209

Metabolic alkalosis decreases bone calcium efflux by suppressing osteoclasts and stimulating osteoblasts
*D. A. Bushinsky* F216

Effect of vasopressin on renal lithium reabsorption: a micropuncture and microperfusion study
*S. J. Walter, D. G. Shirley, and R. J. Unwin* F223

## RAPID COMMUNICATIONS

Organic osmolyte distribution and levels in the mammalian urinary bladder in diuresis and antidiuresis
*E. D. Kwon, J. A. Dooley, K. Y. Jung, P. M. Andrews, A. García-Pérez, and M. B. Burg* F230

Abnormal renal development in the Os/+ mouse is intrinsic to the kidney
*C. M. Sorenson, S. A. Rogers, and M. R. Hammerman* F234

Effect of atrial natriuretic peptide on renal hemodynamics and sodium excretion during human pregnancy
*D. W. Irons, P. H. Baylis, and J. M. Davison* F239

## No. 2. AUGUST 1996

### BRIEF REVIEW

Low permeabilities of apical membranes of barrier epithelia: what makes watertight membranes watertight?
*M. L. Zeidel* F243

Impaired effect of nitric oxide synthesis inhibition on tubuloglomerular feedback in hypertensive rats
*C. Thorup and A. E. G. Persson* F246

Na-K-ATPase isoform ($\alpha_3$, $\alpha_2$, $\alpha_1$) abundance in rat kidney estimated by competitive RT-PCR and ouabain binding
*K. Lücking, J. M. Nielsen, P. A. Pedersen, and P. L. Jørgensen* F253

Reabsorption of native and glycated albumin by renal proximal tubular epithelial cells
*M. Bendayan and I. Londoño* F261

Renal $^{131}$I-hippurate clearance overestimates true renal blood flow in the instrumented conscious dog
*C. A. Visscher, D. de Zeeuw, G. Navis, A. K. van Zanten, P. E. de Jong, and R. M. Huisman* F269

Molecular site for nucleotide binding on an ATP-sensitive renal $K^+$ channel (ROMK2)
*C. M. McNicholas, Y. Yang, G. Giebisch, and S. C. Hebert* F275

Functional characterization of albumin binding to the apical membrane of OK cells
*M. Gekle, S. Mildenberger, R. Freudinger, and S. Silbernagl* F286

Calcium dependence of integrity of the actin cytoskeleton of proximal tubule cell microvilli
*K. Sogabe, N. F. Roeser, J. A. Davis, S. Nurko, M. A. Venkatachalam, and J. M. Weinberg* F292

Enhanced renal vasoconstriction induced by vasopressin in SHR is mediated by $V_1$ receptors
*J. J. Feng and W. J. Arendshorst* F304

Chronic hypokalemia enhances expression of the $H^+$-$K^+$-ATPase $\alpha_2$-subunit gene in renal medulla
*K. Y. Ahn, K. Y. Park, K. K. Kim, and B. C. Kone* F314

Aldosterone induction and epithelial distribution of CHIF
*H. Wald, O. Goldstein, C. Asher, Y. Yagil, and H. Garty* F322

Synthesis and secretion of endothelin in a cortical collecting duct cell line
*K. M. Todd-Turla, X. L. Zhu, X. Shu, M. Chen, T. Yu, A. Smart, P. D. Killen, G. Fejes-Toth, J. P. Briggs, and J. B. Schnermann* F330

Promoter elements that mediate the pH response of PCK mRNA in LLC-$PK_1$-$F^+$ cells
*T. Holcomb, W. Liu, R. Snyder, R. Shapiro, and N. P. Curthoys* F340

cAMP activation of phospho*enol*pyruvate carboxykinase transcription in renal LLC-$PK_1$-$F^+$ cells
*X. Liu and N. P. Curthoys* F347

Albumin endocytosis is regulated by heterotrimeric GTP-binding protein $G\alpha_{i\text{-}3}$ in opossum kidney cells
*N. J. Brunskill, N. Cockcroft, S. Nahorski, and J. Walls* F356

Basal nitric oxide production curtails arteriolar vasoconstrictor responses to ANG II in rat kidney
*H. Ikenaga, R. W. Fallet, and P. K. Carmines* F365

Effects of intravenous adenosine on renal function in healthy human subjects
*V. S. Balakrishnan, G. A. Coles, and J. D. Williams* F374

Cholinergic agonists increase phosphoinositide metabolism and cell calcium in isolated rat renal proximal tubule
*P. Meneton, M. Imbert-Teboul, M. Bloch-Faure, and R. M. Rajerison* F382

Dopamine inhibits AVP-dependent $Na^+$ transport and water permeability in rat CCD via a $D_4$-like receptor
*D. Sun and J. A. Schafer* F391

Mechanism of $H^+$-coupled formate transport in rabbit renal microvillus membranes
*A. M. Saleh, H. Rudnick, and P. S. Aronson* F401

Renal ischemic-reperfusion injury in L-selectin-deficient mice
*H. Rabb, G. Ramirez, S. R. Saba, D. Reynolds, J. Xu, R. Flavell, and S. Antonia* F408

Long-term regulation of four renal aquaporins in rats
*J. Terris, C. A. Ecelbarger, S. Nielsen, and M. A. Knepper* F414

Sustained ERK-2 activation in rat glomerular mesangial cells: differential regulation by protein phosphatases
*H. Schramek, M. Schumacher, and W. Pfaller* F423

Separate regulation of $Na^+$ and anion transport by IMCD: location, aldosterone, hypertonicity, TGF-β1, and cAMP
*R. F. Husted and J. B. Stokes* F433

Insulin-like growth factor-I action on glucose transport in acute renal failure
*K. H. K. Mak and O. Mehls* F440

Mechanisms of stimulation of proximal tubule chloride transport by formate and oxalate
*T. Wang, A. L. Egbert, Jr., T. Abbiati, P. S. Aronson, and G. Giebisch* F446

Regulation of amiloride-sensitive $Na^+$ channels by endothelin-1 in distal nephron cells
*M. S. Gallego and B. N. Ling* F451

Development of urinary concentrating capacity: role of aquaporin-2
*M. Yasui, D. Marples, R. Belusa, A.-C. Eklöf, G. Celsi, S. Nielsen, and A. Aperia* F461

Regulation of *p*-aminohippurate transport by protein kinase C in OK kidney epithelial cells
*M. Takano, J. Nagai, M. Yasuhara, and K. Inui* F469

## No. 3. SEPTEMBER 1996

### INVITED REVIEW

Mechanisms of apoptosis and its potential role in renal tubular epithelial cell injury
*W. Lieberthal and J. S. Levine* F477

---

Urodilatin is involved in sodium homeostasis and exerts sodium-state-dependent natriuretic and diuretic effects
*M. Meyer, R. Richter, R. Brunkhorst, E. Wrenger, P. Schulz-Knappe, A. Kist, P. Mentz, E. G. Brabant, K. M. Koch, G. Rechkemmer, and W.-G. Forssmann* F489

Taurine permeation through swelling-activated anion conductance in rat IMCD cells in primary culture
*S. H. Boese, F. Wehner, and R. K. H. Kinne* F498

Fluorescence imaging study of organic anion transport from renal proximal tubule cell to lumen
*D. S. Miller, S. Letcher, and D. M. Barnes* F508

Effect of α-KG in lumen on PAH transport by isolated perfused rabbit renal proximal tubules
*W. H. Dantzler and K. K. Evans* F521

Hepatic $\alpha_{2u}$-globulin: a potential metabolic role in the rat proximal tubule
*S. C. Borkan, Y-H. Wang, K. T. Lam, P. Brecher, and J. H. Schwartz* F527

Functional expression of the cDNA encoded by the human *ATP1AL1* gene
*A. V. Grishin, M. O. Bevensee, N. N. Modyanov, V. Rajendran, W. F. Boron, and M. J. Caplan* F539

$Cl^-$ current in IMCD cells activated by hypotonicity: time course, ATP dependence, and inhibitors
*K. A. Volk, C. Zhang, R. F. Husted, and J. B. Stokes* F552

Structural and functional analysis of $Na^+/Ca^{2+}$ exchange in distal convoluted tubule cells
*K. E. White, F. A. Gesek, and P. A. Friedman* F560

Sublethal heat shock and cyclosporine exposure produce tolerance against subsequent cyclosporine toxicity
*C. M. Yuan, E. M. Bohen, F. Musio, and M. A. Carome* F571

Extracellular matrix stimulates production and breakdown of inositol phospholipids
*A. V. Cybulsky, A. J. McTavish, and J. Papillon* F579

Arachidonic acid inhibits activity of cloned renal $K^+$ channel, ROMK1
*C. M. Macica, Y. Yang, S. C. Hebert, and W. H. Wang* F588

Enhanced renal sensitivity to angiotensin actions in diabetes mellitus in the rat
*T. M. Kennefick, T. T. Oyama, M. M. Thompson, J. P. Vora, and S. Anderson* F595

A gene transfer system establishes interleukin-6 neither promotes nor suppresses renal injury
*T. Naito, H. Yokoyama, K. J. Moore, G. Dranoff, R. C. Mulligan, and V. R. Kelley* F603

Heterogeneity of $P_{2u}$- and $P_{2y}$-purinergic receptor regulation of phospholipases in MDCK cells
*B. L. Firestein, M. Xing, R. J. Hughes, C. U. Corvera, and P. A. Insel* F610

Localization and regulation of the rat renal $Na^+$-$K^+$-$2Cl^-$ cotransporter, BSC-1
*C. A. Ecelbarger, J. Terris, J. R. Hoyer, S. Nielsen, J. B. Wade, and M. A. Knepper* F619

Characterization of the rat NHE3 promoter
*A. Cano* F629

Regulation of extracellular calcium sensing in rat osteoclasts by femtomolar calcitonin concentrations
*M. Zaidi, V. S. Shankar, O. A. Adebanjo, F. A. Lai, M. Pazianas, G. Sunavala, A. I. Spielman, and B. R. Rifkin* F637

Site-specific regulation of organic osmolytes along the rat nephron
*M. Schmolke, A. Bornemann, and W. G. Guder* F645

Role of prostaglandins in renal medullary circulation: response to different vasoconstrictors
*N. Parekh and A.-P. Zou* F653

Prostaglandins stimulate renin secretion and renin mRNA in mouse renal juxtaglomerular cells
*B. L. Jensen, C. Schmid, and A. Kurtz* F659

Reduced bicarbonate secretion mediates increased distal tubule acidification induced by dietary acid
*D. E. Wesson* F670

Primary structure of rat HGF receptor and induced expression in glomerular mesangial cells
*Y. Liu, E. M. Tolbert, A. M. Sun, and L. D. Dworkin* F679

Autocrine production and TGF-β1-mediated effects on metabolism and viability in renal cells
*G. Nowak and R. G. Schnellmann* F689

Ontogeny of apical membrane ion conductances and channel expression in cortical collecting duct cells
*S. M. Huber and M. F. Horster* F698

Expression and cellular localization of tissue kallikrein-kinin system in human adrenal gland
*D.-Z. Wang, Q. Song, L.-M. Chen, L. Chao, and J. Chao* F709

Proximal tubule dysfunction in cystine-loaded tubules: effect of phosphate and metabolic substrates
*G. Bajaj and M. Buum* F717

Developmental regulation of CFTR expression during human nephrogenesis
*O. Devuyst, C. R. Burrow, E. M. Schwiebert, W. B. Guggino, and P. D. Wilson* F723

Ontogeny of the extracellular calcium-sensing receptor in rat kidney
*N. Chattopadhyay, M. Baum, M. Bai, D. Riccardi, S. C. Hebert, H. W. Harris, and E. M. Brown* F736

Evidence that embryonic kidney cells expressing flk-1 are intrinsic, vasculogenic angioblasts
*B. Robert, P. L. St. John, D. P. Hyink, and D. R. Abrahamson* F744

Characterization of a $B_2$-bradykinin receptor in human glomerular podocytes
*N. Ardaillou, V. Blaise, K. Costenbader, Y. Vassitch, and R. Ardaillou* F754

The $\beta_1$- and $\beta_2$-adrenoceptor subtypes in cultured rat inner medullary collecting duct cells
*G. Yasuda, L. Sun, H.-C. Lee, S. Umemura, and W. B. Jeffries* F762

## SPECIAL COMMUNICATION

Novel mouse embryonic renal marker gene products differentially expressed during kidney development
*M. Kretzler, G. Fan, D. Rose, L. J. Arend, J. P. Briggs, and L. B. Holzman* F770

No. 4. OCTOBER 1996

Increased renal atrial natriuretic peptide synthesis in rats with deoxycorticosterone acetate-salt treatment
*Y.-J. Lee, S.-J. Shin, M.-S. Tan, T.-J. Hsieh, and J.-H. Tsai* F779

Cellular ATP depletion induces disruption of the spectrin cytoskeletal network
*B. A. Molitoris, R. Dahl, and M. Hosford* F790

Halide transport patterns of apical anion exchange in rabbit cortical collecting duct intercalated cells
*C. Emmons* F799

Disparate expression of the AVP gene in Sabra hypertension-prone and hypertension-resistant rats
*C. Yagil, D. Ben-Ishay, and Y. Yagil* F806

Renal tubular epithelial cells mimic endothelial cells upon exposure to oxidized LDL
*A. Agarwal, J. Balla, G. Balla, A. J. Croatt, G. M. Vercellotti, and K. A. Nath* F814

High-salt diet upregulates kininogen and downregulates tissue kallikrein expression in Dahl-SS and SHR rats
*C. Wang, C. Chao, L.-M. Chen, L. Chao, and J. Chao* F824

Role of apoptosis in development of the ascending thin limb of the loop of Henle in rat kidney
*J. Kim, G.-S. Lee, C. C. Tisher, and K. M. Madsen* F831

Uninephrectomy reduces apoptotic cell death and enhances renal tubular cell regeneration in ischemic ARF in rats
*T. Nakajima, T. Miyaji, A. Kato, N. Ikegaya, T. Yamamoto, and A. Hishida* F846

Repressive regulation of the aquaporin-2 gene
*M. Furuno, S. Uchida, F. Marumo, and S. Sasaki* F854

Regulation of epithelial $Na^+$ channels from M-1 cortical collecting duct cells
*M. L. Chalfant, K. Peterson-Yantorno, T. G. O'Brien, and M. M. Civan* F861

Developmental changes in rabbit juxtamedullary proximal convoluted tubule water permeability
*R. Quigley and M. Baum* F871

In situ localization and osmotic regulation of the $Na^+$-*myo*-inositol cotransporter in rat brain
*L. Ibsen and K. Strange* F877

Permeability properties of the intact mammalian bladder epithelium
*H. O. Negrete, J. P. Lavelle, J. Berg, S. A. Lewis, and M. L. Zeidel* F886

Effect of adrenomedullin on cAMP levels along the rat nephron: comparison with CGRP
*R. M. Edwards, W. Trizna, E. Stack, and N. Aiyar* F895

Megalin/gp330 mediates uptake of albumin in renal proximal tubule
*S. Cui, P. J. Verroust, S. K. Moestrup, and E. I. Christensen* F900

Specific effect of maleate on an apical membrane glycoprotein (gp330) in proximal tubule of rat kidneys
*M. Bergeron, P. Mayers, and D. Brown* F908

Chronic metabolic acidosis increases NHE3 protein abundance in rat kidney
*P. M. Ambühl, M. Amemiya, M. Danczkay, M. Lötscher, B. Kaissling, O. W. Moe, P. A. Preisig, and R. J. Alpern* F917

Heavy metals inhibit $P_i$-induced currents through human brush-border NaPi-3 cotransporter in *Xenopus* oocytes
*C. A. Wagner, S. Waldegger, H. Osswald, J. Biber, H. Murer, A. E. Busch, and F. Lang* F926

Localization of bumetanide- and thiazide-sensitive Na-K-Cl cotransporters along the rat nephron
*T. Yang, Y. G. Huang, I. Singh, J. Schnermann, and J. P. Briggs* F931

Calcium-activated chloride currents in primary cultures of rabbit distal convoluted tubule
*M. Bidet, M. Tauc, I. Rubera, G. de Renzis, C. Poujeol, M. T. Bohn, and P. Poujeol* F940

## RAPID COMMUNICATION

Localization of the extracellular $Ca^{2+}$-sensing receptor and PTH/PTHrP receptor in rat kidney
*D. Riccardi, W.-S. Lee, K. Lee, G. V. Segre, E. M. Brown, and S. C. Hebert* F951

## No. 5. NOVEMBER 1996

## EDITORIAL COMMENT

Editorial Comment on "The molecular basis of inherited hypokalemic alkalosis: Bartter's and Gitelman's syndromes"
*S. C. Hebert and S. R. Gullans* F957

## BRIEF REVIEW

The molecular basis of inherited hypokalemic alkalosis: Bartter's and Gitelman's syndromes
*D. B. Simon and R. P. Lifton* F961

Induction of FGF-7 after kidney damage: a possible paracrine mechanism for tubule repair
*T. Ichimura, P. W. Finch, G. Zhang, M. Kan, and J. L. Stevens* F967

Effect of luminal angiotensin II and ANP on early and late cortical distal tubule $HCO_3^-$ reabsorption
*M. L. M. Barreto-Chaves and M. Mello-Aires* F977

Localization and regulation by vitamin D of calcium transport proteins in rabbit cortical collecting system
*J. Van Baal, A. Yu, A. Hartog, J. A. M. Fransen, P. H. G. M. Willems, J. Lytton, and R. J. M. Bindels* F985

Regulation of PDGF-β receptor-operated $Ca^{2+}$ channels by phospholipase C-γ1 in glomerular mesangial cells
*H. Ma, H. Matsunaga, B. Li, M. B. Marrero, and B. N. Ling* F994

$[Ca^{2+}]_i$ in rat afferent arteriole during constriction measured with confocal fluorescence microscopy
*K.-P. Yip and D. J. Marsh* F1004

Inhibition of basolateral potassium conductance by taurine in the proximal convoluted tubule
*S. Breton, F. Belachgar, M. Marsolais, J.-Y. Lapointe, and R. Laprade* F1012

Effects of angiotensin II on cultured rat renomedullary interstitial cells are mediated by $AT_{1A}$ receptors
*C. Maric, G. P. Aldred, A. M. Antoine, R. G. Dean, E. Eitle, F. A. O. Mendelsohn, D. A. Williams, P. J. Harris, and D. Alcorn* F1020

IMCD cells cultured from Dahl S rats absorb more $Na^+$ than Dahl R rats
*R. F. Husted, T. Takahashi, and J. B. Stokes* F1029

$H^+$-$K^+$-ATPase mediates net acid secretion in rat terminal inner medullary collecting duct
*S. M. Wall, A. V. Truong, and T. D. DuBose, Jr.* F1037

Protein kinase C stimulates the small-conductance $K^+$ channel in the basolateral membrane of the CCD
*M. Lu and W. Wang* F1045

Functional evidence for a $Ca^{2+}$/polyvalent cation sensor in the mouse thick ascending limb
*M. Paulais, M. Baudouin-Legros, and J. Teulon* F1052

An oral platelet-activating factor antagonist, Ro-24-4736, protects the rat kidney from ischemic injury
*K. J. Kelly, N. E. Tolkoff-Rubin, R. H. Rubin, W. W. Williams, Jr., S. M. Meehan, C. L. Meschter, J. G. Christenson, and J. V. Bonventre* F1061

Roles of $Ca^{2+}$ and PKC in regulation of acid/base transport in isolated proximal tubules
*H. Yamada, G. Seki, S. Taniguchi, S. Uwatoko, K. Nosaka, K. Suzuki, and K. Kurokawa* F1068

Pressure-mediated vasoconstriction of juxtamedullary afferent arterioles involves $P_2$-purinoceptor activation
*E. W. Inscho, A. K. Cook, and L. G. Navar* F1077

Regulation of Na channels in the rat cortical collecting tubule: effects of cAMP and methyl donors
*G. Frindt and L. G. Palmer* F1086

Functional differences between rabbit and human $Na^+$-dicarboxylate cotransporters, NaDC-1 and hNaDC-1
*A. M. Pajor and N. Sun* F1093

## LETTERS TO THE EDITOR

Ecto-ATPase activity and labeling with the anti-ecto-ATPase antibody in renal brush border do not coincide
*I. Sabolić, C. M. Herak-Kramberger, D. Brown, and G. Burckhardt* F1100

## No. 6. DECEMBER 1996

### INVITED REVIEW

Growth factors and the kidney: regulation of epithelial cell movement and morphogenesis
*L. G. Cantley* F1103

Effect of age on blood acid-base composition in adult humans: role of age-related renal functional decline
*L. A. Frassetto, R. C. Morris, Jr., and A. Sebastian* F1114

Asymmetry of tubuloglomerular feedback effector mechanism with respect to ambient tubular flow
*S. Thomson, V. Vallon, and R. C. Blantz* F1123

Distribution of binding sites for thromboxane $A_2$ in the mouse kidney
*R. B. Mannon, T. M. Coffman, and P. J. Mannon* F1131

Parathyroid hormone-induced calcium efflux from cultured bone is mediated by protein kinase C translocation
*S. M. Sprague, M. M. Popovtzer, M. Dranitzki-Elhalel, and H. Wald* F1139

Immortalized rabbit cortical collecting duct cells express $AT_1$ angiotensin II receptors
*K. D. Burns, L. Regnier, A. Roczniak, and R. L. Hébert* F1147

cGMP-activating peptides do not regulate electrogenic electrolyte transport in principal cells of rat CCD
*E. Schlatter, R. Cermak, W.-G. Forssmann, J. R. Hirsch, R. Kleta, M. Kuhn, D. Sun, and J. A. Schafer* F1158

Differential regulation of renal regional blood flow by endothelin-1
*K. Gurbanov, I. Rubinstein, A. Hoffman, Z. Abassi, O. S. Better, and J. Winaver* F1166

Multiple pathways of organic anion secretion in renal proximal tubule revealed by confocal microscopy
*R. Masereeuw, F. G. M. Russel, and D. S. Miller* F1173

Prostacyclin increases distal tubule $HCO_3$ secretion in the rat
*D. E. Wesson* F1183

Regulation of Fas and Fas ligand expression in cultured murine renal cells and in the kidney during endotoxemia
*A. Ortiz-Arduan, T. M. Danoff, R. Kalluri, S. González-Cuadrado, S. L. Karp, K. Elkon, J. Egido, and E. G. Neilson* F1193

In vivo and in vitro evidence for increased expression of HGF receptor in kidney of diabetic rat
*Y. Liu, E. M. Tolbert, A. M. Sun, and L. D. Dworkin* F1202

The p53-independent activation of transcription of $p21^{WAF1/CIP1/SDI1}$ after acute renal failure
*J. Megyesi, N. Udvarhelyi, R. L. Safirstein, and P. M. Price* F1211

Calcitonin stimulates $H^+$ secretion in rat kidney intercalated cells
*E. Siga, P. Houillier, B. Mandon, G. Moine, and C. de Rouffignac* F1217

Single-channel properties of swelling-activated anion conductance in rat inner medullary collecting duct cells
*S. H. Boese, R. K. H. Kinne, and F. Wehner* F1224

NaCl but not urea activates p38 and jun kinase in mIMCD3 murine inner medullary cells
*Z. Zhang and D. M. Cohen* F1234

Angiotensin II-receptor stimulation of cytosolic calcium concentration in cultured renal resistance arterioles
*Z. Zhu and W. J. Arendshorst* F1239

Hyperosmolality inhibits sodium absorption and chloride secretion in mIMCD-K2 cells
*R. B. Green, M. J. Slattery, E. Gianferrari, N. L. Kizer, D. E. McCoy, and B. A. Stanton* F1248

NaCl and/or urea infusion fails to increase renal inner medullary *myo*-inositol in protein-deprived rats
*T. Nakanishi, F. Nishihara, A. Yamauchi, S. Yamamoto, M. Sugita, and Y. Takamitsu* F1255

Functional differentiation of the human red blood cell and kidney urea transporters
*S. Martial, B. Olivès, L. Abrami, C. Couriaud, P. Bailly, G. You, M. A. Hediger, J.-P. Cartron, P. Ripoche, and G. Rousselet* F1264

---

*Subject Index to Volume 40* F1269
*Author Index to Volume 40* F1279

# CORRIGENDA

*Volume 269, September 1995*
*Volume 38, September 1995*

*Pages F309–F316*: E. D. Lederer and K. R. McLeish. "$P_2$ purinoceptor stimulation attenuates PTH inhibition of phosphate uptake by a G protein-dependent mechanism." The American Heart Association of Kentucky should have been acknowledged for their support of E. D. Lederer.

*Volume 271, September 1996*
*Volume 40, September 1996*

The wrong image was inadvertently printed on the cover of the September issue. The histological section montage from C. M. Sorenson, S. A. Rogers, and M. R. Hammerman (current cover photo) should have been shown, as indicated by the legend on the back cover.